

From qrp-request@Think.COM Mon Dec 6 11:48:56 1993
Date: Mon, 6 Dec 93 08:50:09 PST
From: Raymond.Anderson@EBay.Sun.COM (Ray Anderson)
Subject: Re: .tif and .eps files

KC5CUW writes:

>Looking in the artwork directory of think.com, I found .tif and .eps files
>for the nn1g. Is the .eps a postscript file with a different extention?
>How does one process a .tif file? I'd like to look at these files and don't
>know how to process them.

Perhaps I can shed a little light on this question.

The .tif files are in "tagged interchange file" format. This is a raster scan type file. There must be 20-30 variants of this format, including the type used in landline FAX transmission. I have used the XV utility by John Bradely (bradley@cis.upenn.edu) to view/modify/convert .tif type files on a SUN workstation. I'm sure there are equivalent type programs for DOS platforms also.

The .eps files are "encapsulated postscript files". These are essentially regular postscript files with a few extra lines added to make it possible to import them into various desktop publishing programs. They print out just like a regular .ps file. To look at them, I use the pageview tool on the SUN workstation, or Ghostview on my PC clone.

Hope this info is helpful.

BTW: If anyone needs any raster scan format file (including .tif) converted to any of the following formats, let me know, I can probably do it for you in just a couple minutes:

GIF,PM,PBM,X11,Sun Rasterfile,BMP,Postscript,IRIS,JPEG,TIFF

Ray
72's de WB6TPU

From qrp-request@Think.COM Mon Dec 6 09:33:23 1993
Date: Mon, 6 Dec 1993 8:33:17 -0600 (CST)
From: KELL@LARK.JSC.NASA.GOV
Subject: .tif and .eps files.

Looking in the artwork directory of think.com, I found .tif and .eps files for the nn1g. Is the .eps a postscript file with a different extention? How does one process a .tif file? I'd like to look at these files and don't

know how to process them.

Ted Kell@lark.jsc.nasa.gov
KC5CUW

From qrp-request@Think.COM Mon Dec 6 10:25:24 1993
Date: Mon, 6 Dec 93 10:29:56 EST
From: bappleaga@isd.csc.com (Bob Applegate)
Subject: Re: .tif and .eps files.

A number of PC based tools will read the TIF files, although a TIFF file can have hundreds of options set in it. They are also very popular in the UNIX world as well, and can be viewed with quite a few public domain viewers, such as xtifff or xv. The Aster*x graphics package reads them as well. On the PC side, I can use MS Publisher, and I think that WinWord might handle them as well (I've got a couple of proprietary viewer too). Many scanners produce TIFF output, so anything that can handle scanner files will most likely read them too.

73
Bob, wa2zzx

From qrp-request@Think.COM Tue Dec 14 10:10:42 1993
Date: Tue, 14 Dec 93 10:10:10 -0500
From: wb9omc@ecn.purdue.edu (Duane P Mantick)
Subject: 10-10 International

djadams@silver.ucs.indiana.edu posed the question,

"Incidentally, what is a 10-10 award?"

Weeeeeell, I guess we can take a stab at that. :-) 10-10 International is an organization that you might say is dedicated to the use and preservation of Ten Meters. Most everyone knows that when ten is good, it can be outstanding. It is just as true that when it isn't so good, it really sucks!

Anyway, 10-10 sponsors some 10-meter contests for both CW and phone. There are also awards, which I alluded to in a previous mailing. There are the usual awards, like Worked All States, Worked All Continents, there is a Countries award with a basic certificate starting at 25 countries. There is a Worked All US Counties award, and one member just recently was awarded certificate #1.

Keep in mind that these awards require you to work other 10-10 members, not just any ham.

So when K6SIW was awarded certificate #1 of the Counties award, he had worked 10-10 members in something like 3076 counties! I think 3076 is the right number, I know it is pretty outrageous.....

I believe that the basic counties award is 100 counties. You go up from there.

There are other things, like the bar program. For each 100 10-10 numbers you work, you add another "bar". At 500 there is a certificate called VP (and sometimes called a few other things :-), and you are issued a separate VP number. There are awards that are only open to VP members.

Another award that K6SIW is going after is the OM/XYL award. The upshot of this one is to work husband/wife 10-10 teams.

Uh.....there is a Worked All State Capitals award. I'm sure I am probably leaving something out.

The contest typically is to make as many contacts as possible. You count 2 points for a 10-10 member, 1 point for non-members. I had suggested adding a point category for those working QRP, say 5 points for ops below 25 watts and maybe even 10 points for those below 5 watts. So far I don't think there has been enough interest for them to try it. Of course, with all you hard-core QRPers out there..... :-)

It might be more interesting to run a separate QRP contest rather than doing something that might must confuse the issue.

To join, you need to work 10 10-10 members, collecting their call, their membership number, their name and QTH. You will send this list plus some cash, I don't recall how much....maybe it's 8 bucks for a year..... anyhow, you send this to the manager for the call area you live in, and he/she will get your certificate and card ready for you. For your 8 bucks, you also get the quarterly newsletter. Aside from interesting stories about hams and so forth, the newsletter tends to have info. on DX stations (like what address to send a card, etc.) plus all the dope on the 10-10 contests and awards.

Once you get your number, it is your number for life. Even if later you decide not to renew your membership (gads! horrors!) the number is still yours (and some folks use it in self defense when they are asked for it!) and will count as a valid number for someone else who is hunting.

To date, something around 65,000 numbers have been issued. Quite a few of these are still active, and it seems like an increasing number of them are DX stations.

I have done all my 10-10 work under 25 watts. I'm three states off the WAS,

one continent off the WAC. I probably have enough counties via QSL (or could get them) for the basic Counties award, but I'm not too worried about that right now. :-)

I think I have 391 #'s worked, so I am close to the 400 bar, and hoping to nail down enough for the 500 bar in the next phone contest in February.

Some guys have close to 25,000 worked, I think. I believe that the aforementioned K6SIW is either close to or at the top of the list in this regard.

No doubt, it **IS** more difficult, the less power you use. Running low power during the phone contest borders on the masochistic....

I have been known to give my phonetic callsign, during this contest, as "whiskey bravo nine one masochistic communicator", which is often good for a laugh.

.....but even so, having worked this stuff at a reduced power level, I feel that I have accomplished MORE than if I just went out and "bought" my QSO's like so many other folks have.

Anyhow, something for y'all out in QRP land to think about. Perhaps a strong QRP surge in 10-10 would be good for it and induce some new awards and/or contests.....

Duane
WB9OMC

From qrp-request@Think.COM Tue Dec 7 14:31:28 1993
Date: Tue, 7 Dec 93 9:27:01 HST
From: Jeff Herman <jherman@uhunix.uhcc.Hawaii.Edu>
Subject: 100 watts or 1.00 watts?

Subject: Re: CQ-WW-CW Results

On the QRP mailgroup Doug said:

``Randy, I've seen ur scores in the past and you do great to say the least. I am a DXer and contester myself, but in the CW test, I decided to go low power (100w) on 40 meters single band. I haven't tallied my score yet, but compared
^^^^^^
to you it isn't good. I had 410 qsos and 112 countries 35 zones. I use a full size 40m ground plane (elevated about 20 ft).

Keep up the good work. 73's Doug, N4IJ''

Did you mean to say 1.00w?

72,
Jeff NH6IL

From qrp-request@Think.COM Tue Dec 7 15:48:17 1993
Date: Tue, 7 Dec 93 15:48:21 EST
From: doug.snowden@ccd.harris.com (Doug Snowden)
Subject: Re: 100 watts or 1.00 watts?

No, I mean 100 watts. Not relevant to QRP but relevant to complementing AA2U on the fact that he made a lot of qsos on a fraction of the power I used. Actually, I had planned on using a KW but my amp broke.

My QRP interests are building and operating, but not operating 40m cw during a contest. I can handle most of the other bands QRP in a contest, but not that one.

Doug, N4IJ

From qrp-request@Think.COM Mon Dec 13 14:15:34 1993
Date: Mon, 13 Dec 93 9:15:27 HST
From: Jeff Herman <jherman@uhunix.uhcc.Hawaii.Edu>
Subject: 10M this weekend?

Gang.

I didn't get on 10 this weekend for the contest but I'd like to hear how the rest of you did. Any band openings?

Jeff NH6IL

From qrp-request@Think.COM Mon Dec 13 15:51:29 1993
Date: Mon, 13 Dec 93 14:57:46 CST
From: cieslak@cg9.eda.mke.ab.com (Brian Cieslak)
Subject: Re: 10M this weekend?

Jeff,
I didn't compete but did pick up a few 10 m states I needed. I heard mostly 1's 2's 7's and 6's and one 8 from my qth in SE Wis.

The band was jumping most of the day Saturday, I didn't get on Sunday.

What did you hear from the Aloha State?

Brian
AE9K

From qrp-request@Think.COM Sun Dec 5 20:34:16 1993
Date: Sun, 5 Dec 93 20:34:40 EST
From: majewski@erim.org (Ron Majewski)
Subject: 160m contest as QRP

Hello to all-

It was a good weekend at my QTH. I was able to combine three of my favorite ham radio subinterests at one time -- CW, QRP, and 160m -- during the ARRL 160m contest. Operating time was limited to due those proverbial "prior commitments", but that just meant a higher fun/minute quotient.

I used the hunt-and-pounce method and made 40 QSOs in 20 sections during 80 minutes of operating at 5 watts. The antenna here is pretty poor -- an end fed quarter wave wire about 25 feet off the ground. I use a T network to tune it to 50 ohms. Noise levels on the band were quite low. There were only about a dozen stations that I could hear but not work, so I was very pleased. I heard no stations west of Kansas.

Did anyone else run this contest? If so, I'd be interested in seeing your comments.

73/2.

Ron (wb8ruq).

From qrp-request@Think.COM Mon Dec 6 22:31:25 1993
Date: Mon, 6 Dec 93 22:29:22 EST
From: "Henry T. Rand Jr." (FSAC-AAD) <rrand@PICA.ARMY.MIL>
Subject: 160m Contest Results

I operated the 160m contest last weekend using my 80m loop.

255 QSO's x 33 sections for 16830 points

Just operated part time and didn't stay up very late. Multipliers west of the Mississippi were nearly impossible for me to work with my 5w and 80m antenna. Still, the contest was an enjoyable one.

73,

Randy Rand AA2U

From qrp-request@Think.COM Wed Dec 8 18:15:44 1993
From: majec@cactus.org (Majec Systems)
Subject: advice on parts
Date: Wed, 8 Dec 1993 17:15:38 -0600 (CST)

To the qrp group:

A question. I am about to build a 4 to 6 watt amp, the design of which comes from page 61 of the Solid State Design book by the ARRL. They call for a GE D446C transistor, and suggest a 2n5321 as a replacement worth experimenting with. Well being very new to this hobby I am not sure if the design of the amp is highly dependent on the characteristics of those particular devices or can I substitute another device. If any of you are familiar with the amp design please make some suggestions for replacement transistors for me.

Thanks

Ed Guinn
kb5ruf
majec@cactus.org

From qrp-request@Think.COM Wed Dec 8 13:57:26 1993
Date: Wed, 08 Dec 1993 10:32:32 -0800
From: cleveland@gvg47.gvg.tek.com (Grover Cleveland)
Subject: Any Norcals Left?

Simple questions: are there any Norcal 40 kits left? From whom?

thanks and 73

Grover WT6P

From qrp-request@Think.COM Mon Dec 6 11:38:25 1993
Date: Mon, 6 Dec 1993 10:38:17 -0600 (CST)
From: Peter Hardie <hardie@herald.usask.ca>
Subject: ARCI Sprint.

Well I worked that famous contester, homebrewer and all-round bon-vivant Chuck K5FO on 20 and 15. Also worked Jim KR1S at WA1MBK and probably lots of other famous testers but whose callsigns I don't recognize due to a very poor memory. As Chuck mentioned, condx were awful, K index was 3, and the only DX I worked was HP1AC/QRP.

34Qs 155pts * 29SPC * 10 (power 0.9W) = 44950.

QSO rates were staggering! 9 in the first hour, 11 in 2nd hour, then 12,

and 2 in the last hour. I could hear a couple of people on 40 in the last hour or so but 0.9W couldn't make it.

No homebrew used - hang head in shame - I should at least have hauled out my 20m Howes Tx kit.

Confusing thing, and something to look out for next time, was that there was another contest of some sort going on that also gave out a 4 digit number. I don't know what it was but I had a QSO with VE3AHJ who gave me a number of 6191 which looks like a good ARCI number. But he didn't give out his province (i.e. didn't follow the regular ARCI exchange format) and he sounded very loud given the condx, so I asked for his power. 50W! Even if the 6191 was his ARCI number, I believe that his 50W would mean you'd have to use the 50W (a 2 point QSO) instead of his number (a 5 point QSO). Heard several U.S. stations later on giving out numbers in the same way and not giving their state.

Pete

ve5va.qrp@usask.ca

From qrp-request@Think.COM Mon Dec 6 12:35:11 1993

Subject: Re: ARCI Sprint.

Date: Mon, 6 Dec 93 9:29:08 PST

From: bobh@hpesoc1.cup.hp.com (Bob Headrick)

> Confusing thing, and something to look out for next time, was that there
> was another contest of some sort going on that also gave out a 4 digit
> number. I don't know what it was but I had a QSO with VE3AHJ who gave me

There was a telephoine company employees contest going on. 40M was covered with people calling CQ TP. I think 7.040 was the published frequency....

Bob Headrick WA7OVU

bobh@cup.hp.com

From qrp-request@Think.COM Tue Dec 14 10:10:36 1993

Date: Tue, 14 Dec 93 10:08:12 EST

From: rerobins@mosaic.uncc.edu (Richard E Robinson)

Subject: Argosy mod

I have an analog TenTec Argosy that I have thought about modifying to cover the 17 and 12 meter bands. The 2 500 kHz bands for 29 mHz are unused and I have considered drilling and blasting to add the 2 WARC bands it doesn't cover.

Anyone ever tried this?

Rick kf4ar

From qrp-request@Think.COM Tue Dec 14 12:42:05 1993
Date: Tue, 14 Dec 93 17:20:07 GMT
From: jkearman@arrl.org (Jim Kearman)
Subject: Re: Argosy mod

Rick, KF4AR, mentions adding 17 and 12 meters to his Argosy, by replacing the two high 10-meter positions. I have been considering this same mod on my Argosy. It should be possible, by reworking the xtal oscillator tanks, and running jumpers on the bandswitch. If you do it, let us know!

73, Jim

From qrp-request@Think.COM Mon Dec 13 10:38:23 1993
Date: Mon, 13 Dec 1993 9:38:13 -0600 (CST)
From: KELL@LARK.JSC.NASA.GOV
Subject: Back issues of

A few day back there was a request from a new NORCAL member looking for someone with volume 1/1 and 1/2 of QRPP that would xerox them and send the copies to them. Well, now I am in that situation. Is there anyone out there that would please copy volume 1/1 and 1/2 for me. I think it is legal because Doug says that that is the proper way (page 52, v1/3). I would be happy to pay for the cost of reproduction and postage.

Ted Kell@lark.jsc.nasa.gov
KC5CUW

From qrp-request@Think.COM Wed Dec 8 11:23:11 1993
Date: Wed, 8 Dec 1993 10:23:01 -0600 (CST)
From: KELL@LARK.JSC.NASA.GOV
Subject: Battery charging chips - looking for help.

I know that this is not strictly QRP, but I think the subject is close enough to spare the bandwidth. I am looking into ways to safely charge some NiCd batteries that I purchased from 624 Kits. They are in 4.8 volt, 2 AH packages. I intend to use three of them to provide about 15 volts for my rig. I understand that there are battery charger chips that automate the charging process, so that I don't have to be so concerned. That is, with one of these circuits, I should be able to build a plug it in and "sort of" forget it until I need the battery again. My question, does anyone have information about what chips are available, and where I might go to get more information. Any help would be greatly appreciated.

Ted Kell@lark.jsc.nasa.gov

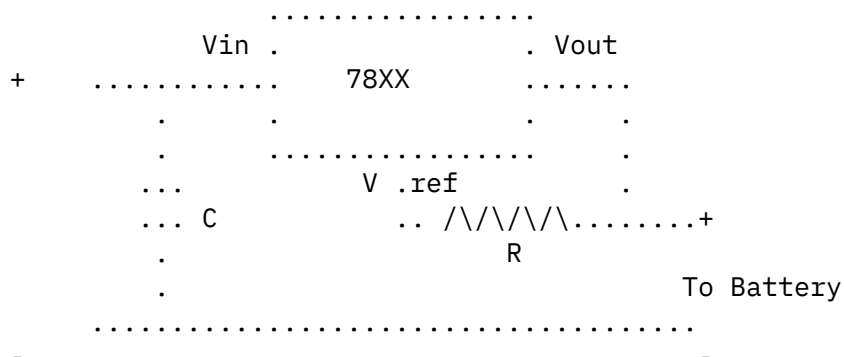
From qrp-request@Think.COM Wed Dec 8 14:32:43 1993
Date: Wed, 8 Dec 1993 11:25:39 -0800 (PST)
From: Stephen Lee <slee@u.washington.edu>
Subject: Re: Battery charging chips - looking for help.

Maxim Integrated Products, Inc., makes what you are looking for. I cannot tell you specifically which chip you need. However, Maxim publishes a Battery Management Book containing 58 designs which they claim were built and tested good. Here is their address, etc.:

I don't think they will charge for the book. Good luck on your project!

From qrp-request@Think.COM Thu Dec 9 10:38:18 1993
Date: Thu, 9 Dec 93 09:52:57 EST
From: epacyna@auratek.com (Edward Pacyna)
Subject: Re: Battery charging chips - looking for help.

Wire it as shown below.



In this configuration, the 78XX regulator is a constant current source. The current to charge a NiCd is typically 10% per hour of its full amp-hour capacity. It will take 12 hours to charge a NiCd on this basis due battery losses.

In your exapmle (A 15V 2A NiCd), use a 7815 regulator and set R to produce a 200mA constant current. $R = 15V / .200A = 75 \text{ ohms}$. From $I^2 \times R$, R should be able to handle over 3W. C is a .33uF capacitor. Just connect the above circuit to a DC power source that can provide a couple of volts more than the voltage regulator chossen.

73

Ed W1AAZ

>
>I know that this is not strictly QRP, but I think the subject is close enough
>to spare the bandwidth. I am looking into ways to safely charge some NiCd
>batteries that I purchased from 624 Kits. They are in 4.8 volt, 2 AH packages.
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>process, so that I don't have to be so concerned. That is, with one of these
>circuits, I should be able to build a plug it in and "sort of" forget it until
>I need the battery again. My question, does anyone have information about what
>chips are available, and where I might go to get more information. Any help
>would be greatly appreciated.
>
>Ted Kell@lark.jsc.nasa.gov
>KC5CUW
>

From qrp-request@Think.COM Thu Dec 9 12:13:33 1993
From: randy@cyphyn.radnet.com (Randy)
Subject: Re: Battery charging chips - looking for help.
Date: Thu, 9 Dec 1993 12:09:05 -0500 (EST)

May I add, that a diode should be put between the regulator and the battery so in case the power (AC) fails, the battery won't try to drain back and blow out the chip?

1N4001
+ in o-----[reg]----->|-----o + batt
+

--

Randy KA1UNW

If you get a shock while

servicing your equipment, "Works for me!"
randy@192.153.4.200 DON'T JUMP! -Peter Keyes
You might break an expensive tube!

From qrp-request@Think.COM Tue Dec 7 12:53:57 1993
Date: Tue, 7 Dec 93 12:53:43 EST
From: ab268@freenet.carleton.ca (Ying Hum)
Subject: Bird Watt Meter elemnet

Does any body the part number for

3-30 MHz 5 Watts Power sensing element.

I know Bird makes them but it does not appear in my catalog.

73

Ying Hum (VE3FUB) ab268@freenet.carleton.ca

--

Ying Hum ~{L7S"G? dWL+; *# , <SDC4s~}
ab268@freenet.carleton.ca

From qrp-request@Think.COM Tue Dec 7 16:07:46 1993
Date: Tue, 07 Dec 93 20:52:55 GMT
From: jkearman@arrl.org (Jim Kearman)
Subject: Re: Bird Watt Meter elemnet

I don't think Bird makes such an element (5W, 3-30 MHz).
I think we'd (ARRL) would have one if they did! The
slug isn't big enough (in terms of wavelength) to make
it go.

73, Jim

From qrp-request@Think.COM Thu Dec 16 19:17:17 1993
Date: Thu, 16 Dec 93 19:14:54 EST
From: Clark Fishman (FSAC-FCD) <cfishman@PICA.ARMY.MIL>
Subject: Cans

In our RF lab we used brand new cans with the press on tops...

they make excellent enclosures and we ran RF attenuation measurements
of several sizes....now where to buy cans????

square cans would give a better form factor....

A Spam can without the Spam.....Lite Spam....HI

WA2UNN]

From qrp-request@Think.COM Fri Dec 17 09:04:53 1993
Date: Fri, 17 Dec 93 08:59:19 EST
From: jmmichael@vnet.IBM.COM
Subject: Cans

Go to your local photo lab and ask for one of the cans their bulk 35mm film comes in. They are about 1.5" tall and 4" in diameter. Some type of tinned steel. If you are into making something really small you may be able to find one of the metal cans with screw on lid that the single rolls of 35mm film comes in.

Jim Michael

=====
The positronium atom has a diameter the same as hydrogen, but its Bohr radius is two times that of hydrogen.

From qrp-request@Think.COM Mon Dec 6 01:15:06 1993
From: andrews@fms.com (Andrew Sargent N80FS)
Subject: change of address
Date: Mon, 6 Dec 1993 01:12:27 -0500 (EST)

I need my address for qrp changed to 'andrews@telemax.com' soon. Whoever maintains this list; I hope he gets this message before Jan 1.

--

Mesmerized by a decade of hate,	! AMATEUR =	N80FS
Flowers and remorse,	! ARMY MARS =	AAN5HJT
Fading vision lost in time,	! CB =	THE NEON KNIGHT
Tragedy on course!!! - Frontline Assembly	! HACKER =	TH3 N30N KN16Ht

From qrp-request@Think.COM Fri Dec 17 21:17:44 1993
Date: Fri, 17 Dec 1993 21:07:57 -0500 (EST)
From: howie cahn <howi@world.std.com>
Subject: Characterizing station performance

I've often been asked questions like "How much will .5 dB in coax losses hurt me?" or, "What can I work with two watts into a dipole?". There are a lot of anecdotal answers floating around but I think many of

them are wrong.

To try to get some better answers I did a little data analysis exercise using results from the recent CQWW cw contest. Whether or not you're interested in contests, a contest is a good place to get data; lots of stations with different configurations making lots of QSOs. Results and station descriptions are usually posted to Internet so I had lots of information to play with. I made a graph with one axis (x) as the effective radiated power (in dB relative to 1 watt into an arbitrary dipole), ERPd. The other axis (y) is the total number of QSOs made. Both scales are logarithmic. On this graph I plotted four points -- representing the winners in each of three categories: high power, low power (150W), and QRP, and the results for my station. I assumed the three winners used the maximum power allowed in their class. I estimated their average antenna gain by taking the gains of their antennas on each band and weighting them based on what percentage of the total contacts that band accounted for. For example, AA2U has stacked 6-element tribanders on the upper bands, a 2-el on 40, and a loop for 80/160. I estimated that this averages out to 10 dBd gain.

The resulting data points were:

Call QSOs Effective Power
(ERPd watts)

```
-----  
K1KI 2927      24000 high power  
K2ZJ 1292      2000 low power  
AA2U  734       50 QRP  
WB2CPU  234      3    me
```

The points are surprisingly colinear. The only anomaly was that AA2U, the QRP winner, was a bit over the line that connects the other three. Since Randy often places in the top ten in the LOW POWER category while running QRP, this is not unexpected. The line that resulted had a slope of about 4 log power/log QSOs, i.e., it takes 4 dB of effective power increase to increase your QSOs by 1 dB's worth. I won't try to draw it here using ASCII characters, but you can start with a point representing 1 watt, 300 Q's and draw the line to the right from there with a slope of four.

From this data I'm concluding the following:

a. Getting rid of losses in coax, antenna switches, etc. improves things somewhat, but not that dramatically. The line's slope of 4 dB power per 'QSOs dB' says that reducing your power loss by 1 dB would have increased your QSO total by about $10^{.025} \approx 6\%$. A 2 dB increase would give 12% more Qs, a 4 dB increase 26%, etc. While the numbers are only specifically applicable for this contest, they

probably can be generalized to imply a success rate for working non-contest DX or making readable contacts in general.

b. While you're not going to be competitive with the big guns, you can make a reasonable number of DX contest QSOs with QRP power and simple antennas. In this contest the graph suggests that you could have made over 400 QSOs with five watts and dipoles, and, 300 QSOs with just one watt and dipoles. Since these numbers were derived mostly by analyzing the contest winners, they represent the upper bound of what could be done.

It might be surprising that the line was linear over a very wide power range, about 5 decades; from about 1 watt to tens of kilowatts. Actually, my experience indicates that it may be valid even lower than that, say down to .1 watt effective power.

I hope this information provides a way of estimating the performance effects of changing station characteristics and encourages people to try working QRP. To save bandwidth here, I've described things quickly. I'd be glad to elaborate or discuss other people's thoughts on the subject.

73,

howie, wb2cpu
howi@world.std.com

From qrp-request@Think.COM Thu Dec 16 16:32:35 1993
From: majec@cactus.org (Majec Systems)
Subject: chirping oscillator
Date: Thu, 16 Dec 1993 15:32:13 -0600 (CST)

The Sad Tale of a Musical Oscillator, Or how I'll spend my Xmas vacation

Well, what that silly first line was meant to allude to was the fact that I have a chirping, whooping, and generally being anything but, stable oscillator.

As CW is my preferred form of rf emission this chirping oscillator just won't cut it.

Here are the specifics.

The rig is a TEN-TEC pm2 (early 70's qrp rig) It's a direct conversion

style transceiver. "The oscillator used for receiving operates directly at the frequency being received. This allows the same oscillator to be used for transmitting. When the XTAL/VFO switch is placed in the VFO position, it connects the receiving oscillator output in place of the crystal."

This is a fairly crude design in my opinion. The DPDT switch has single conductor hookup wire going from the switch to the board (six of them) about 2.5 inches long. The switch selects between 80m and 40m lc circuits which feed the base of the bipolar transistor, the oscillator. The oscillator is followed by a buffer and then the XTAL/VFO switch. After the XTAL/VFO switch is the driver stage and the final.

That's it on the radio

Soooo, what how about suggestions on improving the stability of the oscillator. By the way there is no shielding around the transistor section of the oscillator, the inductor is in a metal can but that's it.

Any suggestions would be appreciated. I am going camping down into Mexico and want to use my new (to me) VFO capable radio as opposed to my MXM rock bound QRP rig.

Thanks in advance.

Ed Guinn
kb5ruf
majec@cactus.org

From qrp-request@Think.COM Thu Dec 16 17:38:42 1993
From: randy@cyphyn.radnet.com (Randy)
Subject: Re: chirping oscillator
Date: Thu, 16 Dec 1993 17:34:47 -0500 (EST)

Go peek inside again...does the set have a regulator for the DC feeding the VFO?

If not...consider making up one...say... using a 7808 .

Adding a buffer stage (MPF-102 as source-follower...1k source resistor, 100k gate, with 33pf to 100pf blocking caps) will help , if its due to 'pulling'...

If the its a swoop rather than a fast to-weep, then I think its due to the DC volts being dragged down a hair by the increased load of xmitting (is normal)

A regulator would fix that (at the VFO).

If its a quick to-weep, then its pulling...a buffer stage is needed.


```
Randy KA1UNW           If you get a shock while
                        servicing your equipment,      "Works for me!"
randy@192.153.4.200    DON'T JUMP!                    -Peter Keyes
                        You might break an expensive tube!
```

Ed Guinn writes:

*** Ed, I used to have one of those. In my estimation, the thing chirps because of

- 1) Changing output load on the oscillator in transmit as compared to receive.
- 2) Instability on the power bus.

What I would do first, is to put an emitter-follower buffer between the oscillator output and everything else.

If that didn't do it, I'd see about improving the supply voltage regulation to the oscillator. A zener diode and a resistor would help isolate the oscillator supply from everything else. Of course, you would lose a bit of oscillator output. Replacing the emitter follower with something with a bit of gain would compensate.

The main problem I had with my Power-Mite was AC hum pickup. A zero-gain buffer (boy do I love those emitter-followers!) in the antenna input path fixed it right up.

- Jerry

```
*****
* Jerry Kaidor          jerry@tr2.com, jkaidor@synoptics.com      *
*                      KF6VB                                       *
*****
```

From qrp-request@Think.COM Fri Dec 17 11:20:13 1993
Date: Fri, 17 Dec 1993 11:16:56 -0500
From: Brad Mitchell <bmitchel@CBA.Kodak.COM>
Subject: cq fosters (dx) de bud

Ok, now that we all know that you can solder a beer can, how about making a round p.c. board with a qrp circuit on it, and soldering it into a beer can. This would help with rigidity of the beer can, and it would be nicely rf shielded. Then you can write it up for QST.

73 All, have a happy qrp holiday, I'm out of here till next year.

```
-----  
|  _ _ _ / _ _ _ _ _ | | Bradley S. Mitchell      WB8YGG  
| | / / | | | Eastman Kodak Company  
| | / / | | | KEMD Electronic Products  
| |< < K O D A K| | | Circuit Board Assembly Dept. 606 Test Engineering  
| | \ \ | | | 901 Elmgrove Road Rochester, N.Y. 14653-5211  
| | _ _ \ \ _ _ _ _ _ | | (716) 726-5775, FAX (716) 726-7109  
| | | | | | | INTERNET: bmitchel@kodak.com  
| | | | | | |  
-----
```

From qrp-request@Think.COM Mon Dec 6 22:21:09 1993
Date: Mon, 6 Dec 93 22:21:19 EST
From: "Henry T. Rand Jr." (FSAC-AAD) <rrand@PICA.ARMY.MIL>
Subject: CQ-WW-CW Results

I was busy working the CQ WW CW contest 2 weekends ago. I operated from home and was testing out my new improved antenna system that I have been working on for the past 2-3 months. I now have a pair of KT34XA's(6 ele tribanders) stacked on a 90 foot crankup tower. The top one is at 90ft and the lower one is on top of the second section at about 38ft.

The resulting stack was fed separately or both in phase. I just used coax switches to change the feed as I am still not finished with the relay box that will allow me to change everything with the push of a single button using solid state logic. I will also add a selection for both antennas fed 180 degrees out of phase for gain at a higher radiation angle.

I used one of the TIC ringrotors to rotate the lower antenna around the tower. Seems to work ok, although its indicator ceased reading the true beam heading by the end of the contest. I had rushed setting it up so never really got sufficient time to calibrate it correctly.

Here is my score breakdown:

Band	QSO's	Zones	Countries
160	3	2	2
80	32	10	20
40	161	23	81
20	268	30	85
15	212	24	73
10	58		
		18	37

Totals 734 107 298=> 821,745 points

I used a 2 element 40 meter yagi which is about 6 ft above the top KT34XA and a full wave 80m loop for 80 and 160m. My score is down considerably over last year but I guess that is due the few openings on 10m.

73,
Randy Rand AA2U

From qrp-request@Think.COM Tue Dec 7 08:02:12 1993
Date: Tue, 7 Dec 93 08:02:24 EST
From: doug.snowden@ccd.harris.com (Doug Snowden)
Subject: Re: CQ-WW-CW Results

Randy, I've seen ur scores in the past and you do great to say the least. I am a DXer and contester myself, but in the CW test, I decided to go low power (100w) on 40 meters single band. I haven't tallied my score yet, but compared to you it isn't good. I had 410 qsos and 112 countries 35 zones. I use a full size 40m ground plane (elevated about 20 ft).

Keep up the good work. 73's Doug, N4IJ

From qrp-request@Think.COM Wed Dec 8 22:48:22 1993
From: Jeffrey Yuan <yuan@phoenix.Princeton.EDU>
Date: Wed, 8 Dec 1993 22:42:50 -0500
Subject: Crystal Testing Request

I am looking for someone who has built Doug DeMaw's Crystal Tester (Jan. 1990 QST) and who might be willing to test ten 10.24mhz crystals I have (got them cheaply). I would be both grateful for any assistance and will pay for all shipment costs (plus a small compensation for your time and troubles). The reason I am posting such a request is because I am building a superhet receiver (Nov. 1983 Ham Radio) and would like to have a multi-pole IF crystal filter; however, I lack a frequency counter and o-scope at the moment to test the crystals (though maybe Santa will be nice to me this year? ... yes? :>). I would be extremely grateful for any assistance.

Thanks!!

73,

Jeffrey Yuan, N2NXC

email: yuan@phoenix.princeton.edu

phone: 609-258-5939 (day)

From qrp-request@Think.COM Tue Dec 7 10:05:15 1993
Date: 07 Dec 93 09:59:51 EST
From: "Judy L. Schnabolk" <73043.1704@CompuServe.COM>
Subject: Curtis Keyer & Wavetek DM For Sale

1. Curtis "Lil' Buzzer" Keyer Model K5

A natural for QRP, portable operation. Size is 1 1/2w x 1 1/2h x 3 1/16d and weighs 3 1/2 oz. Black anodized .062" aluminum construction.

Quiescent current is 50uA and can be powered by internal 9V battery (you can leave it turned on) or 5 - 9V 110Vac adapter.

Tungsten contact relay keying (keys tube or solid state rigs).

Speed Range is 6 to 50 wpm adjustment via front panel thumbwheel control.

Internal adjustments are element weighting, sidetone pitch, volume, max keying speed.

Front panel controls are speed adjustment and power switch.

Rear panel has external d.c. power jack, earphone jack, paddle connections and key line.

Other features are instant starting, self completing dots, dashes, iambic operation, both dot and dash memories and single or dual lever paddle operation.

Mint condition with manual. Price is \$45 or BO.

2. Wavetek DM25XT Digital Multimeter (also measures capacitance, frequency,

TTL &
CMOS logic, transistor Beta)

General: 3 1/2 digit, .7" high numerals, w/ unit annunciators and
function symbols.

Power: 9V battery, average life is 300 hours, auto power off.

DC Volts: 200mV, 2V, 20V, 200V, 1000V, +/- .5% , 10M input Z

AC Volts: 200mV, 2V, 20V, 200V, 750V, +/- 1%

DC and AC Current range: 200uA, 2mA, 20mA, 200mA, 20A

R ranges: 200, 2K, 20K, 200K, 2M, 20M, 2000M ohms.

TTL and CMOS Logic testing (to 20Mhz)

Capactance Ranges: 2nF, 20nF, 200nF, 2uF, 20uF, 200uF, 2000uF +/- 2%

Frequency measurement: 10Hz to 2KHz, +/- .5%

Measures transistor hFE from 0 - 1000, NPN and PNP

Brand new with manual, \$55

Reply to: ed@auratek.com or Compuserve header address

From qrp-request@Think.COM Fri Dec 17 15:47:55 1993

Date: Fri, 17 Dec 93 14:47:46 -0600

From: adams@chuck.dallas.sgi.com (Chuck Adams)

Subject: Dan's Small Parts & Kits

Dan's Small Parts & Kits phone number is (406) 543-2872

it is wrong in the catalog that he sent out a few weeks ago.

For the inquiring minds.

73 dit dit

SIG

-----cut here-----

Chuck Adams, K5FO - CP60

adams@sgi.com

QRP ARCI Awards Chairman

From qrp-request@Think.COM Fri Dec 10 11:09:22 1993

From: dquagliana@attmail.com (os2user@vmdoug.utsd.att.com)

Date: 10 Dec 93 15:34:13 GMT

Subject: DC Receiver Help

Time to tap into some of that QRP expertise out there on the net.....

I need some help with a simple 20 meter NE602/LM386 direct conversion CW receiver that I built. The receiver seems to receive only a few strong signals and many weak signals. I can easily zero beat the strong ones, but not the weak ones.

The weaker signals all seem to have the same very high audio frequency (I guess about 1500-2000Hz). I assume that the weaker signals are real twenty meter CW signals. They sound real. I'd just like to be able to hear them at a much lower audio frequency. (No, I don't have an audio filter, I haven't built that yet!) When I try to tune them in, they just disappear. They're just at that one spot on the dial, and very high pitched.

Is this a common DC receiver problem? What might cause the receiver to do this? What should I "attack" to try and solve this? A bigger, better, higher antenna? Different headphones? A speaker instead of headphones? Some bad component in the receiver? Change the tuning method (from varactor diode to air capacitor)? What thing is most likely to be the problem? I don't really know where to start.

Douglas Quagliana KA2UPW
dquagliana@attmail.com

From qrp-request@Think.COM Fri Dec 10 13:38:08 1993
From: dquagliana@attmail.com (os2user@vmdoug.utsd.att.com)
Date: 10 Dec 93 15:34:13 GMT
Subject: DC Receiver Help

Time to tap into some of that QRP expertise out there on the net.....

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Douglas Quagliana KA2UPW
dquagliana@attmail.com

From qrp-request@Think.COM Mon Dec 6 01:42:52 1993
Date: Sun, 5 Dec 93 22:42:12 PST
From: dh@deneb.csustan.edu (Doug Hendricks)
Subject: December NorCal Club Meeting

The December meeting of the Northern California QRP Club was held at the California Burger Restaurant at the Santa Rita exit on I-580 west of Livermore on Sunday, Dec. 5. 32 members showed up with 7 NorCal 40's also there. Or, should I say 5 NorCal 40's and 2 NorCal 30's. The mods are starting to show up, as James, KI6JD, has his with lights, a keyer, and an audio amp. Bob Warmke, W6CYX, has a NorCal 30 and 40, and both have mods that increase the power output to 5 watts with coverage on the 40 meter model going from 7.000 to 7.150 MHz. Bob has promised to write up an article for the next issue of QRPp so the rest of us can play copy cat.

Stan Cooper is in Japan, but sent his rig that has the front and back panel silk screened with the lettering and dial markings in black ink. It looks really professional, and Stan has very graciously offered to Screen print the front panels for the rest of the NorCal owners. All that you need to do is to mail your front and back panels, that have been painted of course, to him in a floppy disk mailer. Enclose postage for him to send it back to you along with a mailing label that has been pre addressed with your address. Please do not send money, Stan doesn't want any, he just wants to help out. But, please do send stamps and the label to make it as easy as possible for Stan. He will return from Japan on the 9th of December, and promises to have a 1 day turn around on the panels. Stan's address is:

Stan Cooper
1390 Market St.,
Apt. 2024
San Francisco, CA 94102-5313

Jim Cates, WA6GER, brought a much asked for item to the meeting. We have been able to get 50 more cases that match the case for the NorCal 40, except that the front and rear panels do not have holes drilled in them. I am going to attach mine with an "L" bracket to the bottom of the case, and put a tuner and keyer in it to match the NorCal 40. The cases cost us \$10 each, and the club provided the standoffs and special screws at no additional charge. If you want one, send \$10 plus \$2 for shipping to:

Jim Cates, WA6GER
3241 Eastwood Rd.
Sacramento, CA 95821

Jim Pepper is working on a design to build a digital readout for the NorCal 40. He has it designed and the board layed out. He will be building a prototype and hopefully will have it for the next meeting. His article on

the 40M Transceiver that was to appear in the fall issue of Communications Quarterly was bumped to the Winter issue. Look for it to be on the news stand in January or February. The readout should be cheap to build, costing less than \$25 for the parts and board.

Wayne Burdick had his "famous" bread board with the newest project, the receiver section of the Sierra 5, which is a 5 band CW transceiver that will cover the 40 & 30 meter bands and have options for 20, 17 & 15. Wayne describes it as the "big brother" to the NorCal 40. It has enough audio to drive a speaker, true agc, and even has an "S meter". Be patient, as it is in the R & D stage right now, but Wayne is working on it and it looks like a great next club project.

Denis Englander, KD6ETI, brought the "winning" entry to the club logo contest. It is oval shaped, with mountains in the background representing the Sierras, and the NorCal 40 rig with an antenna and key in the foreground. The logo says "NorCal QRP Club Est. 1993". Dennis is investigating the cost of getting patches made, and will report back to the club.

Finally, it was decided to purchase a machine to package the QRPP in so that it will not have to be stapled, and so that the mailing label will not come off. 3 or 4 members have notified me that they did not get the QRPP, just the label, so we needed to do something. Starting with the next issue, we will mail QRPP in a plastic jacket, like QST comes in. The cost is \$67 for the machine, and 2 cents apiece for the plastic bag.

Don't forget to submit your articles for QRPP soon. We need all types, and if it applies to QRP, we are interested. Several of you have commented on how you like the wide variety of articles. Keep sending them to me, and I will keep publishing them.

The members in attendance received an extra "bonus" for attending, as I handed out a nice meter to everyone with the assignment that they build a tuner and bring it to the next meeting. Bob Warmke brought some 10 turn pots and gave them away for use as a replacement on the NC40's. If you get the chance, come on by to the meetings. They are loads of fun, and hey, you never know when one of us will be giving away "extras"!

72, Doug

From qrp-request@Think.COM Mon Dec 6 09:18:13 1993
From: jpo@acd4.acd.com (Jim Osburn)
Subject: Digital Parts As RF Parts
Date: Mon, 6 Dec 93 8:37:24 EST

The recent discussion of DDS reminded me of a silly thing I did once.

I built a WWV receiver using a 74HC04 as an RF amplifier. Amazingly, it worked. But, boy is it hard keeping those suckers from oscillating at well over 100 MHz. Also, when you bias those parts for linear operation, they like to suck power.

Jim, WD9EYB

From qrp-request@Think.COM Mon Dec 6 22:05:36 1993
From: andrews@fms.com (Andrew Sargent N8OFS)
Subject: Re: Digital Parts As RF Parts
Date: Mon, 6 Dec 1993 22:03:06 -0500 (EST)

> From: jpo@acd4.acd.com (Jim Osburn)
> Message-Id: <9312061337.AA08724@IEDV5.acd.com>
> Subject: Digital Parts As RF Parts
> To: qrp@Think.COM (QRP Mailing List)
> Date: Mon, 6 Dec 93 8:37:24 EST
> X-Mailer: ELM [version 2.3 PL11]
> Content-Type: text
>
> The recent discussion of DDS reminded me of a silly thing I did once.
>
> I built a WWV receiver using a 74HC04 as an RF amplifier. Amazingly, it
> worked. But, boy is it hard keeping those suckers from oscillating at well
> over 100 MHz. Also, when you bias those parts for linear operation, they
> like to suck power.
>
>
> Jim, WD9EYB
>
Ummm, Waaaaaaait a minute here... How in the world did you use a 7404
as an RF Amp??? Could you send me a schematic or documentation???

BTW, I've got a ton (500+) of 74XX chips that I bought at a fest for
\$10, I think it was worth it, and if I blow a few, so what...

--

Mesmerized by a decade of hate,	! AMATEUR =	N8OFS
Flowers and remorse,	! ARMY MARS =	AAN5HJT
Fading vision lost in time,	! CB =	THE NEON KNIGHT
Tragedy on course!!! - Frontline Assembly	! HACKER =	TH3 N30N KN16Ht

From qrp-request@Think.COM Sat Dec 4 23:42:03 1993
Date: Sat, 4 Dec 93 20:41:53 PST
From: awpaeth@okanagan.bc.ca (Alan Paeth)
Subject: Direct Synthesis

Background:

I am intrigued by the use of ``traditional'' (7400-series) digital logic used
to generate square waves on the standard bands (e.g. CW segments beginning
at $2^N \times 3.5\text{MHz}$). But I dislike building multiple Pi networks with multiple

coils to wind and (most of all) flipping many switches to change bands.

Question:

Has anyone tried direct digital synthesis on the lower HF bands? That is, binary adder/accumulator is driven by a clock and increments a waveform by a programmable, constant phase? By ``direct'' I am excluding binary rate multipliers a/o programmable divide by N counters -- I'd like to be a purist where phase noise is concerned. I'm also looking for reasonably small parts count -- I can live with an eight-bit adder and just a few rock-solid frequencies in each segment.

While on the subject of 7400 meets QRP: every time I come across "50 ohm line driver" in my old TTL data books I have this sudden urge to breadboard one up, solder a strand of RG-174 to an output pin, and run the strand out the window.

So question two: has anyone tried using digital gates as PAs at QRP levels? Sure, it takes one back coils for pi nets and to increase impedence, but there are some high current drivers out there with built-in latches, asynchronous resets and other stuff that would reduce parts count of a small QRP CW rig. Is this practical, or does Miller effect burden the design of the exciter stage?

Yrs,

/Alan Paeth
KD3XG/VE7OKA

From qrp-request@Think.COM Sun Dec 5 21:07:27 1993
Date: Sun, 5 Dec 1993 18:09:06 -0800 (PST)
From: Ward Silver <hwardsil@seattleu.edu>
Subject: Re: Direct Synthesis

Be wary of using digital parts as oscillators, amplifiers, etc. in a radio (ie; single-frequency) application. They are designed to have a _wide_ bandwidth and switch _very_ fast, thus generating a lot of spurious energy. If you don't like winding coils, you'll love filtering and shielding like mad to get rid of the unwanted RF by-products.

Digital direct synthesis works very well. The more bits used to synthesize the waveform, the less sharp edges involved and the less unwanted energy in the output. Unfortunately, the drawback is more digital stuff switching.

I think using logic parts as RF sources and amps is a neat idea, but be careful about putting out spurious goop where you might not notice it. A repeater owner was just served with a \$5000 Notice of Apparent Liability by the FCC because he was outputting a 243MHz spur on RECEIVE!! This is well within the range of most modern parts to leak out a few nW thus

attracting unwanted attention.

Use metal boxes, bypass all the parts extra well, bypass all lines going in and out of the box, etc. DON'T use the plug-in breadboards for more than bench-top lash-up work before building the real thing correctly.

Just being a wet blanket ;-)

73, Ward NOAX

From qrp-request@Think.COM Sun Dec 5 15:31:23 1993
From: jjw@seastar.org (John Welch)
Subject: Re: Direct Synthesis at HF
Date: Sun, 5 Dec 1993 13:56:12 -0600 (CST)

In your article <9312050441.AA13897@okanagan.bc.ca> ["Direct Synthesis"], you wrote:

> Question:
>
> Has anyone tried direct digital synthesis on the lower HF bands? That is,
> binary adder/accumulator is driven by a clock and increments a waveform by
> a programmable, constant phase? By ``direct'' I am excluding binary rate
> multipliers a/o programmable divide by N counters -- I'd like to be a purist
> where phase noise is concerned. I'm also looking for reasonably small parts
> count -- I can live with an eight-bit adder and just a few rock-solid
> frequencies in each segment.

Yes, there have been a number of HF DDS articles recently, and there will be more. For lowest parts count, there was an article in ?June ?July of 73 magazine, using a Harris NCO and CA3338 DAC that interfaced via a parallel port to a PC to generate signals to about 12MHz.

There was also one earlier, in December 92 and January 93 of 73 that used a Qualcomm NCO and the CA3338 DAC to go to 21.5MHz. This one is modular - the first article used diodes for the frequency setting, and in Jan 94 there is supposed to be 2 more articles, one using a parallel port and one using thumbwheel switches. I'm much more familiar with this series - I wrote all but the parallel-port one and I built the first proto of that, too. :-)

If you wanted cheaper and can stand higher parts count, an outfit called Novatech has a DDS using 7400 chips to go to 512kHz, and if you substitute faster chips you could get it to go into the really low HF bands, but it will wind up costing as much as the others once you buy new chips (*sigh*). I also built one of these, and used a MC4024 VCO with MC4044 PLL chip to multiply it by 100. It took

several 4024s to cover up to about 20 meters, though, and those chips too are getting hard to find cheaply.

> While on the subject of 7400 meets QRP: every time I come across "50 ohm line driver" in my old TTL data books I have this sudden urge to breadboard one up, solder a strand of RG-174 to an output pin, and run the strand out the window.
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> So question two: has anyone tried using digital gates as PAs at QRP levels?
> Sure, it takes one back coils for pi nets and to increase impedence, but there are some high current drivers out there with built-in latches, asynchronous resets and other stuff that would reduce parts count of a small QRP CW rig. Is this practical, or does Miller effect burden the design of the exciter stage?

I've used a lot of 74HC373s as 'finals' in very QRP transmitters - the problem is at 5 volts p-p you get 62mw into a 50 ohm load. At 12 vp-p, you get 360mw, and you're pumping a *lot* of current through the device. Even with a good heatsink on the chip, they tend to go up in smoke quickly.

For HF work, the chips can handle it (re: the Miller effect) - they're usually used at frequencies of 20MHz or higher, and they have to make a decently square wave there. The built-in latches do allow you to key the output, but it results in a very hard note - very square edges. For the sake of the intended listener, use a regular shaping keying circuit and a single PA transistor (I usually use something like a 2n3866 or MRF517 for a watt or 2).

--

John Welch, N9JZW

From qrp-request@Think.COM Thu Dec 9 12:04:11 1993
From: Tony Lyon <tonyl@clyde.sps.mot.com>
Subject: Do you know where I could find an HW8 or HW9
Date: Thu, 9 Dec 93 11:03:59 CST

Greetings fellow QRP'ers.

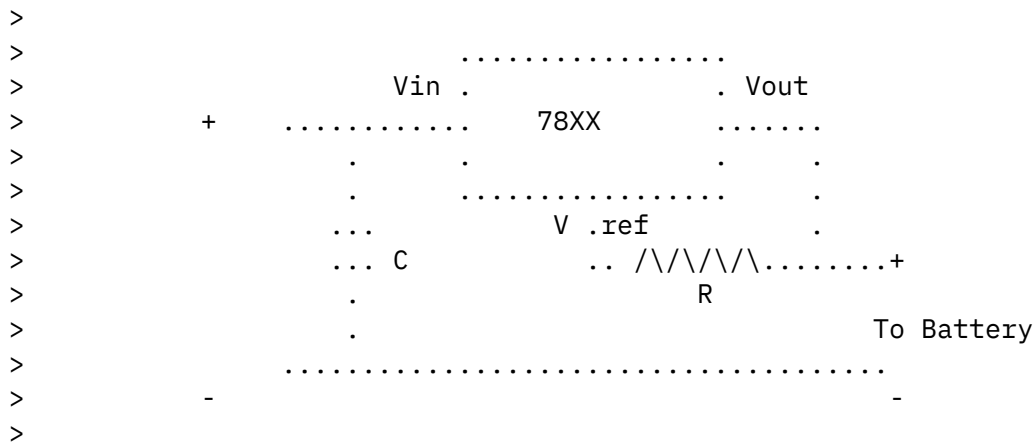
I am new to ham radio and really enjoy CW and QRP.
I am trying to get my hands on a Heath HW8 or HW9. Do you know where I could probably find one in working condition??

Regards,
Tony Lyon (KB5ZYA)

From qrp-request@Think.COM Thu Dec 9 14:55:51 1993
Date: Thu, 9 Dec 93 14:53:11 EST
From: Barry x24904/ER/167B-TED <ornitz@RDCS.Kodak.COM>

Subject: Ed Pacyna W1AAZ's Battery Charger

Ed suggested the following constant current circuit:



>In your exapmle (A 15V 2A NiCd), use a 7815 regulator and set R to produce a
>200mA constant current. $R = 15V / .200A = 75 \text{ ohms}$. From $I^2 \times R$, R should
>be able to handle over 3W. C is a .33uF capacitor. Just connect the above
>circuit to a DC power source that can provide a couple of volts more than
>the voltage regulator chossen.

Actually the input voltage must be at least the desired battery voltage plus the basic regulator voltage plus about two to three volts overhead for the regulator. For Ed's case of a 12 cell Nicad, i.e. 15 volts, the input voltage would need to be greater than:

15 + 5 + 3 = 23 volts for a 7805 regulator which dissipates
0.6 watts for a fully charged battery increasing to
3.6 watts for a fully discharged battery and the
resistor will dissipate 1 watt,

15 + 12 + 3 = 30 volts for a 7812 regulator which dissipates
0.6 watts for a fully charged battery increasing to
3.6 watts for a fully discharged battery and the
resistor will dissipate 2.4 watts,

15 + 15 + 3 = 33 volts for a 7815 regulator which dissipates
0.6 watts for a fully charged battery increasing to
3.6 watts for a fully discharged battery and the
resistor will dissipate 3 watts.

This is because these regulators maintain their respective voltage between their output pin and their common pin or reference pin.

A better regulator choice would be the LM317 regulator which maintains approximately 1.25 volts between its output pin and its adjustment pin. For the same 200 mA charging rate to the 15 volt battery, the resistor

value is $1.25/0.2$ or 6.25 ohms which dissipates 0.25 watt. The input voltage will need to be at least 19.25 volts. Once again the regulator will dissipate 0.6 watts with a fully charged battery and 3.6 watts with the battery fully discharged.

It can be seen from this that the higher voltage regulators need higher input voltages and that the resistors dissipate much more power with the higher voltages. LM317 regulators are slightly more expensive than the fixed voltage regulators and the 7805 regulator is probably the least expensive at hamfests. From a cost standpoint (we QRP'ers are cheap!), a 7805 regulator, a 25 ohm 2 watt (safety factor of 2) resistor, a small heat sink and a 24 volt power supply would suffice.

73, Barry WA4VZQ

<pre> ----- _ _ _ _ _ _ _ _ / / / / < < K O D A K \ \ _ _ \ \ _ _ _ _ _ </pre>	<p>Dr. Barry L. Ornitz WA4VZQ</p> <p>Eastman Chemical Company</p> <p>ECC Research Laboratories, Engineering Research Div.</p> <p>Process Instrumentation Research Laboratory</p> <p>P. O. Box 1972, Building 167B</p> <p>Kingsport, TN 37662 (615/229-4904, FAX 615/229-4558)</p> <p>INTERNET: ornitz@kodak.com</p>
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From qrp-request@Think.COM Mon Dec 13 12:47:25 1993
Date: Mon, 13 Dec 93 09:36:16 PST
From: GroverC@gvgadg.gvg.tek.com (Grover Cleveland)
Subject: How big is a Norcal 40?

Can someone give me the case measurements of the Norcal 40?

tnx,

Grover
WT6P

From qrp-request@Think.COM Fri Dec 17 19:10:22 1993
From: lbrunson@rodgers.rain.com
Date: Fri, 17 Dec 1993 14:51:25 PDT
Subject: How do rigs degrade with degradation of supply voltage

I am curious as to how rigs work with lower power supply voltages. I am planning of building a small rig for a 50 mile back packing trip next summer. In the past I have had trouble with transmitters becoming unstable or unclean when the battery voltage declines. I am planning on using alkaline cells because I believe they have the greatest energy density.

What I propose is for some of you to hook up your favorite qrp rig to a variable bench supply and then measure power output and supply current versus supply voltage. Also, note when any irregularities occur (instability, etc).

Any takers?

Thanks and 73. Lowell

Lowell Brunson (503) 681-0417
Rosenet: lbrunson@roland.co.jp
Internet: lbrunson@rodgers.rain.com (preferred)
lowell@techbook.com
Packet Radio: KC7DX@K7IQI.OR.USA.NA

From qrp-request@Think.COM Fri Dec 10 10:22:12 1993
From: bob.berlyn@chowda.sbs.com (Bob Berlyn)
Subject: HW-7 and Junk Box
Date: Thu, 9 Dec 1993 20:07:00 GMT

Hi gang,

I has recenlty given a HW-7. I traded it for an OLD PC XT. The guy that gave it to me said it would make for a good cabnet for some project. I hooked it up and turned it on, It seems to work great, or as well as they ever did. Lots of microphonics in the receiver. Transmitted works good.

Does any one have or know were I can get a schematic and/or know of any modifications that were published for the rig. I would like to tinker with it and see if I can improve it any.

Also came upon a larg cash of parts , from what I think was a power supply for some kind of electronic equipment being thrown out , two large transformers 12, 8 and 18 volts, three heat sinks and several LARGE Capacators and some Motorola transistors, (voltage regulators I think)

MC7812CK I think a 12 volt reg.

MJ802

MJ4502

Does any one know what these are, and do you know where I can find data sheets on them. I cant find them in my NTE cross reference.

Any help would be welcome.

Thanks

Bob Berlyn
N1PWU

EMAIL Bob.berlyn@Chowda.sbs.com

* OFFLINE 1.54

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From qrp-request@Think.COM Wed Dec 8 09:32:19 1993
Date: Wed, 8 Dec 93 09:31:54 EST
From: rjl3f@shamash.cs.virginia.edu
Subject: HW-8 For Sale \$125

HW-8 For Sale \$125 (Firm) + shipping.

The rig is a little scratched up, mostly on the bottom side and it works like a charm.

Bob (N4AHB)
rjl3f@uvacs.cs.virginia.edu

From qrp-request@Think.COM Mon Dec 13 11:28:29 1993
Date: Mon, 13 Dec 93 08:11:33 PST
From: GroverC@gvgadg.gvg.tek.com (Grover Cleveland)
Subject: HW-8 Mods

Hi Gang,

I have an HW-8 and the Hotwater Handbook, so I have started the mods to make that radio more functional.

I recall that there were two other sources of improvements. One was called "A Super-Modified HW-8 Contest Machine" (sic) and I believe it appeared in QST and was authored by Doug DeMaw (a guess). The other was a series by Ade Weiss, title unknown.

If anyone can provide me with leads to acquiring either of those articles, or any others, I would be most appreciative.

73

Grover

WT6P

From qrp-request@Think.COM Wed Dec 15 17:03:49 1993
Date: Wed, 15 Dec 93 13:35:09 PST
From: GroverC@gvgadg.gvg.tek.com (Grover Cleveland)
Subject: I hate to do this but . . .

I have a rarity. A radio by Don Stoner (yes, the legendary Don Stoner) that I need to sell.

Here is the scoop: this is basically a 12 watt ssb radio that covers the voice portion of 40 meters. It was designed for missionaries, oil exploration teams, and the like, so it is quite rugged. It was modified by one of Stoner's employees with a vfo which covers 7150 to 7300 KHz.

I have had this radio all over the place and it does fine as a mobile or portable rig. I have the original manual but no docs on the vfo, although it seems to be of a standard varactor design and has proven to be quite stable. There is a front mounted speaker and volume control, mic jack and earphone jack. The vfo dial now occupies the left side of the face. There is plenty of room in the cabinet for all kinds of stuff. You could probably fit in a 6ah gell cell.

If you are somewhat interested (not just curious), I will fax you the pages from the manual that describe the radio. The photograph in the manual shows the radio in its channelized form.

I'll sell the radio for \$225 with the docs but without a microphone. I'll pay the shipping costs and you may have it for five days to see if you like it. If you do, I'll cash the check. If not, you ship it back to me.

There are no guarantees however the radio was working fine when I put it away about five years ago. It is clean.

Grover
WT6P
(916) 478-3153 (days)

qrparci#3795

From parish@Think.COM Mon Dec 6 11:09:43 1993
From: Edward Parish <parish@Think.COM>

Date: Mon, 6 Dec 93 11:09:42 EST
Subject: Internet Connections

Tommorrow, December 7, our connection to the internet will be down from 1200Z to 1300Z (7:00 EST to 8:00 EST). Please refrain from posting messages to the reflector during that time. Thanks.

From qrp-request@Think.COM Sat Dec 18 02:18:07 1993
Date: Sat, 18 Dec 1993 2:16:31 -0500 (EST)
From: FOXG@WCSUB.CTSTATEU.EDU
Subject: it does work!

How much power do you need to work DX? Not more than 2! I worked ZL3ADX tonight/this morning from Connecticut using nothing more than my OHR HP QRP Transceiver and a G5RV at 65 feet on 40 meter CW. My biggest problem in the QSO was terrible image problems in the DC receiver. I have made one mod (adding a diode) to try and cut down on the image prob

From qrp-request@Think.COM Mon Dec 6 15:04:47 1993
Date: Mon, 6 Dec 93 10:04:05 HST
From: Jeff Herman <jherman@uhunix.uhcc.Hawaii.Edu>
Subject: Kit manufacturers

Gang,

I've received several files from the ARRL email server which I'd like to pass on to you all. There's four of them which might be of interest to you all. I'll send one per day so as not to add to the traffic on here.

This first one starts with a series of questions and answers about building kits, followed with a list of kit manufacturers.

Thanks so much to the ARRL for this great service.

Jeff NH6IL

ARRL Technical Information Service

Kit Manufacturers List

Rev.: July 16, 1993 File: KITS

This information package was prepared as a membership service by the American Radio Relay League, Inc., Technical Information Service, 225 Main St., Newington, CT 06111 (203) 666-1541. Email: tis@arrl.org (Internet).

>From the files of the ARRL Automated Electronic Mail Server,
(info@arrl.org):

Reprinted from: August 1993 QST, Lab Notes column
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Lab Notes: Kits Galore!

Summertime, and the living is easy. It's the perfect time to build a kit! You can do it all at once in a mad frenzy, or work on it piecemeal. Either way, you're guaranteed fun, education and true pride of ownership. Mike Gruber, WA1SVF, ARRL Laboratory Engineer, briefly discusses kit-building and provides a valuable list of kit suppliers.--WB8IMY

Q: I'd sure like to try an electronics project, but I'm not quite sure where to begin. I'm considering kits, but is kit building really worth the trouble?

A: Well, when I was a youngster I would watch with fascination as my Dad assembled his latest Heathkit project in our basement. Smoke would often curl up from his soldering iron late into the night. Friends and family would gather for the grand unveiling of his latest triumph. A drawer full of those red plastic nut starters that came with each and every kit (remember those?) is still in our basement somewhere! I received quite an education when I was finally old enough to follow in Dad's kit-building footsteps. This early exposure to electronics inspired me to obtain an Amateur Radio license and even pursue a career in electronics.

Q: Are kits difficult to build? What ever happened to all those classic kit manufacturers, anyway? What about Heath? I've heard that they're out of the kit business. Does this mean that kit building is a thing of the past?

A: Whoa! Easy, big fella. Let me answer your questions one at a time.

First, the level of difficulty varies with the individual kit. A very simple kit can require only minimal time, skill and experience to put together. Complex kits can, of course, be considerably more difficult. It is important to determine which kits match your abilities. When selecting a kit, be sure to consider any additional purchases that may be required, such as knobs and cabinets. You may also need test equipment to complete the project.

Second, it's true that many of the old kit manufacturers, such as Eico and Knight-Kit, are no longer in the kit business. Back in the days of point-to-point wiring and vacuum tubes, a kit manufacturer stood a decent chance of succeeding in the consumer electronics market. They offered better products at lower prices-including products not normally available. Today, the miniaturization of electronics, modern assembly techniques, and cheap overseas labor have taken away much of the competitive edge that kit makers enjoyed. Heath, however, is still making kits, mostly of the educational variety. These may be excellent starter kits to get your feet wet.

Finally, it's not true that kit building is a thing of the past. True pride of ownership and the thrill of doing it yourself are things that mass-produced products don't always offer. Many companies still make kits to fill this niche. Just about any skill level can be accommodated if you know where to look.

Q: Okay, you've sold me. I want to run home right now, warm up my soldering iron! I'll bet you've even compiled a list of kit manufacturers for me. How about it?

A: Yep, here's the list. Happy kit-building!

A & A Engineering
2521 W LaPalma, Unit #K
Anaheim, CA 92801
tel: 714-952-2114
fax: 714-952-3280

A & A offers a wide range of amateur related kits from QRP

transceivers to a digital frequency synthesizer and a 450-MHz spectrum analyzer. Electronic components, enclosures, ICs and ham-related publications are also available. Catalog available.

Antique Electronic Supply
6221 S Maple Ave
Tempe, AZ 85283
tel: 602-820-5411
fax: 602-820-4643

Numerous kits for reproducing antique and vacuum tube radios are available. Antique Electronic Supply is also an excellent source for parts, components and documentation for antique radios. Catalog available.

C & A Electronic
PO Box 25070
Athens, 10026 Greece
tel: 52.42.867
tel: 52.42.537

Established in Athens in 1977, C & A Electronic has now grown to 15 employees. Their current 53-page catalog includes over 150 kits with, according to Simeon Krizias, SV1AYI, of C & A, more on the way. The projects range from the relatively simple to the complex. Kits include Amateur Radio, high-fidelity stereo, power supplies and instrumentation projects. Ready-made versions are available for novice kit-builders who prefer advanced or intermediate kits. A special US price list is available.

CCI (Communications Concepts, Inc)
508 Millstone Drive
Beavercreek, OH 45434
tel: 513-426-8600
fax: 513-429-3811

CCI's catalog features many linear amplifiers and projects from Motorola Applications Notes. Amplifier boards and various components are offered separately as sets. Other kit projects include an ATV receive converter and an audio squelch control. Semiconductors and other components can also be purchased separately. VISA and MasterCard accepted.

Cirkit Distribution Ltd.

Park Lane
Broxbourne
Herts EN10 7NQ
tel: 44-992-444111
fax: 44-992-464457

More than 100 kits for the radio amateur, including preamps, power amps, converters, speech processors and a dip meter. Catalog available. Cirkit does not have a price list in US dollars, but does accept Master Card, VISA and American Express.

Curry Communications
852 North Lima St
Burbank, CA 91505
tel: 818-846-0617

Two kits currently available:

The 80-AU converts the entire LF/VLF band to the 80-meter amateur band. Cost is \$59.95.

The SAM-1 is a transverter that enables operation on the license-free 1750 meter band with an 80-meter amateur transceiver. Cost is \$89.95.

Down East Microwave
RR 1, Box 2310
Troy, ME 04987
tel: 207-948-3741
fax: 207-948-5157

Down East Microwave (DEM) is owned and operated by Bill Olson, W3HQT. Numerous kits are offered for VHF, UHF and microwave projects. Down East Microwave also carries an extensive line of antennas. Office hours are 9 am to 4:30 pm Eastern Time, Monday through Friday. Call anytime; Bill says to be sure to leave a message on the machine if no one is available. Business and personal checks as well as VISA and MasterCard are accepted. COD orders carry a \$4 service charge. Catalog available.

FAR Circuits
18N640 Field Court
Dundee, IL 60118

FAR Circuits provides PC boards for a number of QST projects.

Hamtronics, Inc
65 Moul Rd
Hilton, NY 14468-9535
tel: 716-392-9430
fax: 716-392-9420

A wide variety of amateur related kits are available. Kits include VHF and UHF exciters, linear amplifiers, receivers, repeaters, repeater accessories, preamps and receive converters. Some kits are FCC type accepted for commercial service. A 40-page catalog is available.

Heath Company
PO Box 1288
Benton Harbor, MI 49023-1288
tel: 800-253-0570

Although Heath's kit line is no longer as extensive as many old-timers may recall, they still carry a number of "build your own" electronic projects. Their current kit line includes two weather computers and numerous educational kits, such as a portable radio, an electronic cricket and a power supply. VISA, MasterCard and American Express accepted.

John Langner, WB2OSZ
115 Stedman St
Chelmsford, MA 01824-1823

John provides the Pasokon SSTV project kit featured in January 1993 QST. One empty expansion slot in a 286 or faster computer, 640K of memory, a color monitor and a VGA display adapter are all you need to send and receive all popular modes of SSTV. The complete kit is \$199.95, or \$229.95 for an assembled and tested unit.

Kanga US
Bill Kelsey, N8ET
3521 Spring Lake Dr
Findlay, OH 45840
tel: 419-423-5643 (7 pm to 11 pm Eastern Time only)

Bill, N8ET, operates Kanga US as an importer of QRP kits manufactured by Kanga Products in England:

Kanga Products
Dick Pascoe, G0BPS
Seaview
Crete Road East
Folkstone CT18 7EG
England

Dick is currently the only person at Kanga in England. Kanga offers over 25 Amateur Radio kits with emphasis on QRP. Kanga's philosophy is to keep prices low by not supplying parts typically found in most junkboxes, such as the cabinet and knobs. Send one unit of First Class postage when requesting a catalog from Kanga US. VISA and MasterCard accepted.

Lake Electronics
7 Middleton Close, Nuthall
Nottingham, NG16 1BX
England
tel: 0602 382509

Every Lake kit is complete, down to the last component, including knobs and screws. The catalog features QRP transceivers, a receiver, an SWR meter, a power meter/dummy load, an antenna tuning unit, an audio filter and a power supply. A special price list is included for overseas customers. VISA, MasterCard and Eurocard accepted.

Mark V Electronics, Inc
8019 E Slauson Ave
Montebello, CA 90640
tel: 213-888-8988 (Catalog and information)
800-423-FIVE orders only (outside California)
800-521-MARK orders only (California residents)
fax: 213-888-6868

More than 70 kits available including high-fidelity audio products, laboratory equipment, power supplies, light controllers, games and numerous miscellaneous projects. Audio amplifiers range from 6 to 300 watts. Kit difficulty levels are individually specified as beginner, intermediate or advanced. VISA, MasterCard and American Express accepted.

M.A.S. Enterprises
UHF Technik

104 King St South
St. Jacobs ON N0B 2N0
Canada
tel: 519-664-1273
fax: 519-664-3082

Four kits currently available: a 6-meter SSB transverter, 2-meter foxhunting receiver, 24 cm FM TV transmitter, and a baseband processor for the TV transmitter. These kits are not intended for beginners. A catalog is forthcoming. Prices range from \$69 to \$198. Owner: Manfred H. Zielinsky, VE3ZIE.

Oak Hills Research
20879 Madison St
Big Rapids, MI 49307
tel: 616-796-0920
800-842-3748
fax: 616-796-6633

Founded by Doug DeMaw, W1FB, and sold three years ago to Dick Witzke, KE8KL. Oak Hills Research has long been a source of QRP kits and components. Several new products are now being added to the company's line. Hours are weekdays from 8 am to 6 pm. VISA and MasterCard accepted.

Ocean State Electronics
PO Box 1458
6 Industrial Dr
Westerly, RI 02891
tel: 401-596-3080
800-866-6626 (orders only)
fax: 401-596-3590

Kits appear on pages 56-61, 64 and 85 of Ocean State's 1993 catalog. Included are a QRP transceiver, several receiver and robot kits, a keyer and code practice oscillator, educational and training kits and electronic test instruments. VISA, MasterCard and COD accepted; \$10 minimum order. Open weekdays 8 am to 5 pm EST, Saturday 10 am to noon. Frank Pellicano, WB1GTK, President.

Ramsey Electronics Inc.
793 Canning Parkway
Victor, NY 14564
tel: 716-924-4560
fax: 716-924-4555

A variety of kits ranging from complete amateur transceivers to mini-kit type projects for under \$10. Products include VHF/UHF FM transceivers, HF receivers, QRP transmitters, an active antenna, a CW keyer, 20 watt amplifier for a QRP transmitter, shortwave receiver, RDF kits and other projects. Ramsey charges a flat rate of \$3.95 for shipping, insurance and handling. Call or write for a free catalog.

\$equence Electronics
John Beech, G8SEQ
124 Belgrave Road
Coventry CV2 5BH
England

Monoband direct-conversion receiver and transmitter kits available from 80 through 6 meters. All parts, including a diecast box and printed circuit board, are included. A three-band version is also available. Other kits include a receive and transmit converter from 10 to 6 meters and an FM transceiver for 50, 70 or 144 MHz. All \$equence kits are specified as intermediate-level projects.

Townsend Electronics
PO 415
Pierceton, IN 46562
tel: 800-944-3661 (US Only)
219-594-3661
fax: 219-594-5580

Townsend Electronics carries kits by one of the largest kit manufacturers in England:

C. M. Howes Communications
Eydon, Daventry,
Northants NN11 6PT,
England
tel: 0327 60178

Townsend's 26-page catalog features receivers, transmitters and transceivers. Also included are such projects as a speech processor, a VHF converter, a code-practice oscillator and a digital frequency display. All kits are engineered by Dave Howes, G4KQH, a former BBC engineer, who founded C. M. Howes in 1983. Townsend Electronics accepts VISA and Mastercard. Amateurs outside the United States may order kits from directly from C. M.

Howes (Dave requests a couple of IRCs for overseas catalog requests.)

Tucson Amateur Packet Radio (TAPR)
PO Box 12925
Tucson, AZ 85732
tel: 602-749-9479
fax: 602-749-5636

TAPR is a nonprofit research and development corporation with more than 1000 members worldwide. It was founded in an attempt to develop a low-cost Terminal Node Controller (TNC) kit. This effort resulted in the now famous TNC-1. TAPR's second development, the basis for most TNC's currently in use, is known as the TAPR TNC-2. TAPR no longer provides complete TNC kits. Instead, they have licensed several commercial manufacturers to produce the TNC-2 design. They still provide the TNC-2 circuit board and associated EPROMs, EPROM codes, schematics and manuals. Modems and related hardware are still available in kit form. TAPR also offers an extensive selection of associated software. Catalog is available.

Truscott's Electronic World
Division of Shredall Pty. Ltd
30 Lacey Street
Croydon, Victoria, 3136
Australia
tel: (03) 723 3344
fax: (03) 725 9443

Resells products and kits from Dick Smith, Altronics and Arista. Several other kits also available. Most kits are not for the beginner and were featured projects in Amateur Radio Magazine, the monthly publication of the Wireless Institute of Australia. A catalog is now in the works and new kits are being added.

624 Kits
171 Springlake Dr
Spartanburg, SC 29302
tel: 803-579-6262 (days)
803-583-1304 (after 6 pm)

624 Kits was founded several years ago by Pat Bunn, N4LTA. The name 624 was originally chosen because the company made kits for the 6-, 2- and 420-MHz bands. Even though they no longer make

VHF/UHF kits, the name remains. Most of the products offered by 624 are QRP in nature and many appeared in QST. Included are numerous transmitters, receivers, W1FB projects, the Modified Cubic Incher, the Neophyte Receiver and the Gary Breed, K9AY, receiver kit. Any kit can be returned for a full refund before assembly. All parts are 100% guaranteed and repair service is also available. Please include two units of First Class postage when requesting a catalog.

Other sources of kits:

All Electronic Components
118-122 Lonsdale Street
Melbourne, VIC 3000
Australia
NOTE: SWL, Amateur, Test Equipment

Altronics
P.O. Box 8350
Perth Mail Exchange
WA 6000
Australia
NOTE: Test Equipment, Power Supplies

Auskits
Amblecote Crescent
Mulgrave, VIC 3170
Australia
NOTE: Amateur, QRP

Dan's Small Parts and Kits
1935 South 3RD West #1
Missoula, MT 59801
Tel: 1-406-543-2872
Note: Neophyte Rx, 40M Cub in., 20M Superhet, others.

Dick Smith Electronics
P.O. Box 468
Greenwood, IN 46142
1-317-888-7265
Note: General kits

Digitrex Electronics
1005 Bloomer Road
Rochester, MI 48063
NOTE: VHF, QRP, Amateur

Eico Electronic Instruments Co., Inc.
363 Merrick Rd
Lynbrook NY 11563
Note: No current kits, EICO manuals and schematics only

Harlech Electronics
Noddfa, Lower Road
Harlech, Gwynedd LL46 2UB
England
NOTE: QRP, SWL

Hosfelt Electronics Inc.
2700 Sunset Boulevard
Steubenville, OH 43952
1-800-524-6464
Note: General interest kits

IDIOM Press
P.O. Box 583
Deerfield, IL 60015
Note: CMOS Super-keyer II

John Beech
124 Belgrave Road
Wyken, Coventry CV2 5BH
England
NOTE: Amateur Transceiver

Maplin Electronic Supplies
PO Box 3
Rayleigh, Essex SS6 8LR
England

Mercury Systems

15 Lakeside Dr.
Marlton, NJ 08053
1-609-596-3304

MFJ
Box 494
Mississippi State MS 39762
601-323-5869
Note: SW receiver kit, QRP kits

NCG
1275 North Grove Street
Anaheim, CA 92806
NOTE: 15 m Mobile XCVR

Penntek Electronics
14 Peace Dr.
Lewistown, PA 17044
1-717-248-2507
Note: The Neophyte Receiver, QST

Q-Sat
P.O. Box 110
Boalsburg, PA 16827
NOTE: SWL Receiver

R & R Associates
3106 Glendon Avenue
Los Angeles, CA 90034
NOTE: Amateur, QRP

S & S Engineering
14102 Brown Road
Smithsburg, MD 21783
Tel: 1-301-416-0661
Note: ARK-40 QRP CW kit

Smith Enterprises
408 East Mauna Loa
Glendora, CA 91740
NOTE: QRP

Steward Electronics Components Pty
P.O. Box 281
Oakleigh, VIC 3166
Australia
NOTE: Amateur

Tejas RF Technology
P.O. Box 720331
Houston, TX 77272-0331
NOTE: Backpacker II, other Amateur kits

NOTE: The ARRL does not warrant any of the manufacturers listed above,
or their products. Addresses subject to change without notice.

From qrp-request@Think.COM Tue Dec 7 08:41:06 1993
Date: Tue, 07 Dec 93 08:33:19 GMT
From: ehare@arrl.org (Ed Hare - KA1CV)
Subject: Re: Kit manufacturers

Jeff Herman <jherman@uhunix.uhcc.Hawaii.Edu> writes:

>Gang,
> I've received several files from the ARRL email server which I'd like
>to pass on to you all. There's four of them which might be of interest
>to you all. I'll send one per day so as not to add to the traffic on here.
> This first one starts with a series of questions and answers about
>building kits, followed with a list of kit manufacturers.
> Thanks so much to the ARRL for this great service.

Thanks, Jeff! After all the bashing we sometimes take, it is nice
to get an attaboy.

For the benefit of all, the email server's address is info@arrl.org.
Send the following as the text of a message to that address:

help
index
quit

That will get you the help file and the index. There is LOTS of stuff
there, and it is growing fast!

73 and Happy Holidays from ARRL HQ, Ed -- KA1CV

Ed Hare, KA1CV
American Radio Relay League
225 Main St.
Newington, CT 06111
(203) 666-1541 - voice
ARRL Laboratory Supervisor
RFI, xmtr and rcvr testing

ehare@arrl.org

My posts and views do not necessarily
represent the policy of the ARRL,
but I can probably get in trouble
for them anyway!

From qrp-request@Think.COM Tue Dec 14 16:43:52 1993
Subject: MFJ 9030 Improvements?
Date: Tue, 14 Dec 93 13:41:42 PST
From: Grover Cleveland <groverc@gvgadg.gvg.tek.com>

I understand that the newer versions of the MFJ rigs are
somewhat improved.

Does anyone have a list of the specific mods? Would anyone
be willing to let me copy the _new_ schematic for one of
these newer rigs so that I might attempt to improve mine?

thanks and 73,

Grover
WT6P
qrp#3795

From qrp-request@Think.COM Fri Dec 17 15:00:52 1993
Date: Fri, 17 Dec 93 12:07:06 PST
From: Spence S Wilhelm <Spence_S_Wilhelm@ccm.hf.intel.com>
Subject: MFJ 9040 xcvr for sale

Text item: Text_1

I have an MFJ 9040 QRP xcvr for sale that I bought in May of this
year(93). I hate to sell this radio but want to continue with
other projects. The radio is clean and in great shape. I've
used it exclusively since I bought it and have had no problems
with it. The radio does include a modification to increase the
audio output. I got the modification instructions directly from
MFJ.

Price: \$120 (I paid \$155 for xcvr)

Includes: MFJ 9040 xcvr
Instruction manual with schematic
Modification instructions from MFJ for increased audio output
I will pay UPS ground shipping

Spence Wilhelm
work phone: (602)987-9403
home phone: (602)554-5050
spence_s_wilhelm@ccm.hf.intel.com

The following information was taken from the MFJ 9040 instruction manual...

Receiver Section:

Frequency Coverage: 7.000-7.150 Mhz coverage
Receiver Type: Single conversion superhet
VFO Frequency: 4.85-5.0 MHz
IF Frequency: 12 Mhz
IF Selectivity: 750 Hz crystal ladder filter
AGC: Audio-derived, instant T/R recovery
Sensitivity: Better than 7.0 Mhz noise floor
RIT: 1.5 KHz range
Audio: 8 Ohms, speaker or external phones
Receive current: 50 mA average

Transmitter Section:

Keying: High-Z, semi-QSK
Sidetone: 700-Hz sinewave
RF power output: > 4W, VCC 13.8 V, 50-Ohm Load
VSWR Tolerance: 3:1 VSWR or greater
Transmit Current: 1 Amp at 13.8 VDC
T/R switch: Semi-QSK, adjustable hold (0-2 sec)

MFJ also sells two items that fit in the case:(neither is included with this radio, you can purchase them from MFJ yourself)

700-hz 4-pole active CW filter
Curtis 8044ABM Iambic key
er

From qrp-request@Think.COM Fri Dec 10 12:12:34 1993
Date: Fri, 10 Dec 1993 12:11:54 -0500
From: okas_rp%ncsd.dnet@gte.com

Subject: MJ802 and MJ4502

Bob, N1PWU writes:

>

> MJ802

>

> MJ4502

> Does any one know what these are, and do you know where I can find
> data sheets on them. I can't find them in my NTE cross reference.

I say:

The MJ802 and MJ4502 are 150-200 Watt silicon power transistors that are useful from DC to a couple of hundred Khz. They are a complementary pair, but I don't remember which is NPN and vice versa. I can dig up the information over the weekend. In general terms, the VCB0 is around 90V, and ICsat is ~25A, though you wouldn't want to operate at those extremes.

Southwest Technical Products Corp. (SWTPC) introduced their "Universal Tiger", a 100 watt audio power amplifier, in the early 70's which used these parts in the output stage. I remember frying a few pairs of these then expensive devices since the amplifier's design was less than ideally stable and it would occasionally go into rf oscillation.

Bob - N3MBY

From qrp-request@Think.COM Fri Dec 10 14:02:45 1993

Date: Fri, 10 Dec 1993 12:11:54 -0500

From: okas_rp%ncsd.dnet@gte.com

Subject: MJ802 and MJ4502

Bob, N1PWU writes:

>

> MJ802

>

> MJ4502

> Does any one know what these are, and do you know where I can find
> data sheets on them. I can't find them in my NTE cross reference.

I say:

The MJ802 and MJ4502 are 150-200 Watt silicon power transistors that are useful from DC to a couple of hundred Khz. They are a complementary pair, but I don't remember which is NPN and vice versa. I can dig up the information over the weekend. In general terms, the VCBO is around 90V, and ICsat is ~25A, though you wouldn't want to operate at those extremes.

Southwest Technical Products Corp. (SWTPC) introduced their "Universal Tiger", a 100 watt audio power amplifier, in the early 70's which used these parts in the output stage. I remember frying a few pairs of these then expensive devices since the amplifier's design was less than ideally stable and it would occasionally go into rf oscillation.

Bob - N3MBY

From qrp-request@Think.COM Thu Dec 16 21:13:29 1993
From: randy@cyphyn.radnet.com (Randy)
Subject: more cans
Date: Thu, 16 Dec 1993 21:09:28 -0500 (EST)

I once used a small can of varnish ...pouring it off into a coffee can with a rubber lid first... to make a mini dummy load.

The push-on lid held a SO-234 (soldered it on with QRO solder-iron P.U.!!)

SO-234 's center pin supported 3 150 ohm, 2 watt CARBON COMPOSITION * resistors, and their other ends went back to the SO-234's shell (on inside)

The 3 150's make for 50 ohms...rated 3 watts REAL diss, and was RF tight enough to not pin the S-meter if xmit was shielded well.

Then, I made a 2nd one, for 75 ohms...same as above, but 2 watts real rating

I later added mineral oil and made a big slippery mess. pleh!

* not those helical carbon-film ones, unless happy to test below 30mc.

--

Randy KA1UNW	If you get a shock while	
	servicing your equipment,	"Works for me!"
randy@192.153.4.200	DON'T JUMP!	-Peter Keyes
	You might break an expensive tube!	

From qrp-request@Think.COM Mon Dec 6 14:30:41 1993
Date: Mon, 6 Dec 93 14:30:36 EST

From: doug.snowden@ccd.harris.com (Doug Snowden)
Subject: NEC99532

Anyone got specs on one of these? Like gain? I was wondering what the advantage is in using one of these things rather than a MC1350? I see that W7Z0I used both in one of his later transceivers. I don't have the schematic in front of me.

I haven't seen any responses on my idea of getting together for a quantity buy of SBL balanced mixers, so I guess I'll go that one myself.

Doug, N4IJ

From qrp-request@Think.COM Mon Dec 6 16:49:38 1993
Date: Mon, 6 Dec 93 16:51:29 EST
From: Clark Fishman (FSAC-FCD) <cfishman@PICA.ARMY.MIL>
Subject: NEC99532

I got some samples from CEL the rep for NEC..no big deal they are plastic case T092 package...You could use a 2n3866 probably with no big difference.

From qrp-request@Think.COM Mon Dec 6 17:27:54 1993
Date: Mon, 6 Dec 93 17:28:12 EST
From: doug.snowden@ccd.harris.com (Doug Snowden)
Subject: Re: NEC99532

Thanks for the info, I'll try a 2N3866 & see.

73's Doug, N4IJ

From qrp-request@Think.COM Mon Dec 13 14:56:27 1993
Date: Mon, 13 Dec 93 14:56:09 EST
From: rerobins@mosaic.uncc.edu (Richard E Robinson)
Subject: New subscriber

Hello QRPers,

I saw this address listed on a boatanchor post and thought I'd subscribe. I've been QRP off and on since 1966 when I made a contact with my Eico 723 in the tune position.

Current rigs are a TenTec Argosy and an HW-9 8 band model. I'd like to renew my QRP ARCI membership but don't have the address.

73 all,

Rick Robinson KF4AR QRP ARCI #5553
rerobins@mosaic.uncc.edu

From qrp-request@Think.COM Mon Dec 6 16:40:43 1993
Date: Mon, 6 Dec 93 15:46:49 CST
From: cieslak@cgc9.eda.mke.ab.com (Brian Cieslak)
Subject: nn1g parts placement

Did we ever figure out if we had the parts placement available
for the nn1g stuff??? If so where is it?

Brian- AE9K

PS.. I have a program that can read in all sorts of graphical formats and save
them in other modes if that was the problem? tiff-> PS or PS -> tif or bmp etc.

From qrp-request@Think.COM Mon Dec 6 14:06:57 1993
From: lapin@casbah.acns.nwu.edu (Gregory Lapin)
Subject: NN1G Postscript Schematic
Date: Mon, 6 Dec 1993 12:58:45 -0600 (CST)

The postscript file to print out the NN1G Mark 1 schematic had to be
modified to make it fit on an 8-1/2" x 11" page. I saw that someone had
posted as correction to change the:

0 -210 translate

line to be:

0 -310 translate

However a small amount was still chopped off (the words: "A 20 METER
TRANSCIEVER"). In order to see the whole thing, the translation should be:

0 -325 translate

Greg Lapin KD9AZ

From parish@Think.COM Mon Dec 6 14:12:59 1993
From: Edward Parish <parish@Think.COM>
Date: Mon, 6 Dec 93 14:12:58 EST
Subject: NN1G Postscript Schematic

From: lapin@casbah.acns.nwu.edu (Gregory Lapin)
Date: Mon, 6 Dec 1993 12:58:45 -0600 (CST)

The postscript file to print out the NN1G Mark 1 schematic had to be modified to make it fit on an 8-1/2" x 11" page. I saw that someone had posted as correction to change the:

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line to be:

0 -310 translate

However a small amount was still chopped off (the words: "A 20 METER TRANSCEIVER"). In order to see the whole thing, the translation should be:

0 -325 translate

Greg Lapin KD9AZ

It is so modified...

From qrp-request@Think.COM Mon Dec 6 22:03:28 1993

From: jjw@seastar.org (John Welch)

Subject: no subject (file transmission)

Date: Mon, 6 Dec 1993 08:40:04 -0600 (CST)

In article <9312050441.AA13897@okanagan.bc.ca> "Direct Synthesis"!

> Question:

>

> Has anyone tried direct digital synthesis on the lower HF bands? That is,
> binary adder/accumulator is driven by a clock and increments a waveform by
> a programmable, constant phase? By ``direct'' I am excluding binary rate
> multipliers a/o programmable divide by N counters -- I'd like to be a purist
> where phase noise is concerned. I'm also looking for reasonably small parts
> count -- I can live with an eight-bit adder and just a few rock-solid
> frequencies in each segment.

Yes, there have been a number of HF DDS articles recently, and there will be more. For lowest parts count, there was an article in ?June ?July of 73 magazine, using a Harris NCO and CA3338 DAC that interfaced via a parallel port to a PC to generate signals to about 12MHz.

There was also one earlier, in December 92 and January 93 of 73 that used a Qualcomm NCO and the CA3338 DAC to go to 21.5MHz. This one is modular - the first article used diodes for the frequency setting, and in Jan 94 there is supposed to be 2 more articles, one using a parallel port and one using thumbwheel switches. I'm much

more familiar with this series - I wrote all but the parallel-port one and I built the first proto of that, too. :-)

If you wanted cheaper and can stand higher parts count, an outfit called Novatech has a DDS using 7400 chips to go to 512kHz, and if you substitute faster chips you could get it to go into the really low HF bands, but it will wind up costing as much as the others once you buy new chips (*sigh*). I also built one of these, and used a MC4024 VCO with MC4044 PLL chip to multiply it by 100. It took several 4024s to cover up to about 20 meters, though, and those chips too are getting hard to find cheaply.

> While on the subject of 7400 meets QRP: every time I come across "50 ohm line
> driver" in my old TTL data books I have this sudden urge to breadboard one up,
> solder a strand of RG-174 to an output pin, and run the strand out the window.
>
> So question two: has anyone tried using digital gates as PAs at QRP levels?
> Sure, it takes one back coils for pi nets and to increase impedience, but there
> are some high current drivers out there with built-in latches, asynchronous
> resets and other stuff that would reduce parts count of a small QRP CW rig. Is
> this practical, or does Miller effect burden the design of the exciter stage?

I've used a lot of 74HC373s as 'finals' in very QRP transmitters - the problem is at 5 volts p-p you get 62mw into a 50 ohm load. At 12 vp-p, you get 360mw, and you're pumping a *lot* of current through the device. Even with a good heatsink on the chip, they tend to go up in smoke quickly.

For HF work, the chips can handle it (re: the Miller effect) - they're usually used at frequencies of 20MHz or higher, and they have to make a decently square wave there. The built-in latches do allow you to key the output, but it results in a very hard note - very square edges. For the sake of the intended listener, use a regular shaping keying circuit and a single PA transistor (I usually use something like a 2n3866 or MRF517 for a watt or 2).

--

John Welch, N9JZW

From qrp-request@Think.COM Sat Dec 4 15:50:18 1993
Date: 04 Dec 93 15:46:18 EST
From: "Steve Silverwood [CA]" <76703.3035@CompuServe.COM>
Subject: No-Code issue

Brian:

>> "Can't we all just learn to get along"

I agree. It's amazing to me that, with so much we have in common within amateur radio, we can't seem to just coexist with one another on the air or on

the nets. Seems a shame....

-- //Steve//

Steve Silverwood [KB6OJS]	CompuServe: 76703,3035
Computer Associates	GEnie: S.SILVERWOOD
One Computer Associates Plaza	Internet: 76703.3035@compuserve.com
Islandia, NY 11788-7000	Voice: (516)CALL-CAI (225-5224)
	FAX: (516)DIAL-FAX (342-5329)

From qrp-request@Think.COM Mon Dec 13 13:47:18 1993
Date: Mon, 13 Dec 93 12:47:06 -0600
From: adams@chuck.dallas.sgi.com (Chuck Adams)
Subject: NorCal 40

If i remember correctly, the size of the NorCal 40 is
4.5" x 4.2" x 2.3" - close enough for government work.

Mine is sold.

73 es seasons greetings dit dit
SIG
-----cut here-----
Chuck Adams, K5FO - CP60
adams@sgi.com
QRP ARCI Awards Chairman

From qrp-request@Think.COM Fri Dec 10 23:21:03 1993
Date: Fri, 10 Dec 93 20:20:19 PST
From: dh@deneb.csustan.edu (Doug Hendricks)
Subject: NorCal 40 Cases

Gang, we have been able to obtain 50 matching cases for the NorCal 40. It is just like the original, but there are no holes drilled in the front and back plates, so you can use them for matching keyers, tuners, power supplies, or whatever. These cases cost us \$10 each, and the NorCal Club is providing the spacers and special screws. They are made out of .060 aluminum and really hold up well. To order send \$10 plus \$2 shipping and handling to:

Jim Cates, WA6GER

3241 Eastwood Rd.
Sacramento, CA 93620

:Note: I am very much a member of the NorCal Club, but several have asked for these cases and that is why I am posting it here.

72, Doug
KI6DS

From qrp-request@Think.COM Thu Dec 9 13:43:14 1993
Date: Thu, 9 Dec 93 12:41:37 -0600
From: adams@chuck.dallas.sgi.com (Chuck Adams)
Subject: NorCal 40 for Sale

Yep, you read the heading correctly. One NorCal 40 assembled, rather nicely I might add. \$100 firm and that does include shipping.

No mods and no painting done to case.

Reason for sale: too many rigs and the K5FO Special is a done deal (at least the prototype is working to my satisfaction). I'm checking my mail several times a day, so don't expect immediate response to any inquiries. Order in which I receive the mail takes precedence.

This is the rig everyone has been raving about on the west coast and also some on the east coast. Someone has posted the specs previously.

I'm working on another posting for tomorrow or later tonite.

73 dit dit
SIG
-----cut here-----
Chuck Adams, K5FO - CP60
adams@sgi.com
QRP ARCI Awards Chairman

From qrp-request@Think.COM Thu Dec 16 09:58:21 1993
Date: Thu, 16 Dec 93 09:59:58 EST
From: hysell@Kodak.COM (John D. Hysell)
Subject: NorCal 40 questions

Where can I find out more about this rig? Is a FAQ sheet available?
I understand another 100 kits are underway, and I might be interested...
-thanks

John
hysell@kodak.com
N2VTK

From qrp-request@Think.COM Tue Dec 14 17:32:14 1993
Date: Tue, 14 Dec 1993 14:33:32 -0800
From: burdick@interval.com (Wayne Burdick)
Subject: NorCal 40: The Second Batch

The NorCal 40 is back!

Many of you--including NorCal club members--asked about the NorCal 40 AFTER we had already sold all 100 of the kits. Since the response was so positive, we've decided to do another batch of 100.

The first batch of 100 taught us a lot about doing a big club project. Some of us went through two sets of tires and wore out our welcome looking for bargains at surplus stores, which was the only way to keep the cost low enough to offer the kits for \$75. This time, we're going to keep our social lives intact and buy almost all of the parts new, and consequently the price is going up \$14. This is still a bargain when you consider that the NorCal 40 is a complete superhet transceiver kit, with custom case, all controls and connectors, a really clean silk-screened PC board, and a complete assembly manual. (If the NorCal 40 becomes a commercial kit, it will sell for \$100 to \$120 depending on whether or not they use slave/child labor! We can sell it for less because we have a bunch of retired guys doing the kitting who promised thier wives exotic vacations after this is all over.)

If you're interested in a NorCal 40 kit, call Jim Cates at 1-916-487-3580 or write to him at 3241 Eastwood Road, Sacramento, CA 95821. He'll let you know if there are any left and reserve one for you, at which time you should send him a check (in his name) for \$89 plus \$4 shipping/handling.

If you're not a NorCal Club member, you'll make Doug Hendricks an even happier guy than he usually is by including another \$5 to join up and receive the next issue of the NorCal journal, QRPp. Doug does a great job on QRPp--the last one was around 60 pages! You'll get plenty of QRP tips including ideas for modifying the NorCal 40. (Some club members have modified thier NorCals to put out 5 watts and cover the whole 40-meter CW band, notably Bob Warmke, W6CYX.)

Again, remember to make the check out to Jim Cates, NOT me and NOT NorCal. Note: This is a club project, and all surplus receipts, if any, will go towards NorCal club activities and future projects.

If you missed the original description of the NorCal 40, here's a reprint. Please forward this letter to others who aren't on Internet who might be

interested.

72/73,

Wayne Burdick, N6KR

* * *

NorCal 40 Transceiver Description

The NorCal 40 is a compact 40-meter CW transceiver optimized for ease of assembly and use. It is particularly well suited to portable, battery-powered operation, with very low receive-mode current drain. To make assembly as easy and trouble-free as possible, all components, including the controls, connectors, and even the case parts are mounted on a single printed circuit board. There is virtually no chassis wiring. Alignment is similarly easy, and can in many cases be done with no test equipment, or with only a separate transceiver that covers the 40-meter CW band.

The receiver is a superhet, providing good sensitivity, selectivity, and freedom from 60-Hz hum pickup. The 4-pole crystal filter offers clear single-signal reception, and a simple differential JFET AGC circuit is used to keep strong signals relatively constant. An RF gain control is provided to attenuate extremely loud signals. The conversion scheme used results in a stable, low-frequency VFO (variable-frequency oscillator), operating at about 2 MHz.

Operating features include RIT (receive incremental tuning), solid-state Transmit-Receive switching, transmit signal monitoring, and variable power output up to about 2 watts.

Specifications

(Note: Numeric values given are typical.)

General

Size:	2.2" (H) x 4.6" (W) x 4.5" (D)
Power Requirements:	10 to 15VDC; reverse-polarity protection
Receive:	15mA typ.
Transmit:	200mA typ. at 2.0 watts output
Tuning Range:	Any 35 to 40 kHz portion of 40 meters

VFO: 2.085MHz at RF = 7.000MHz; 10 to 30 Hz drift
from cold start after one hour

Transmitter

Output: 500mW to 2.0W, adjustable
Final amp efficiency: 75%
Load Tolerance: brief operation into high SWR or open
Transmit offset: 500-700 Hz
T-R (transmit-receive) delay: 200 milliseconds

Receiver

Sensitivity: Better than 0.5uV for 10dB S+N/N
Selectivity: 400Hz @ -6dB, 1.5kHz @ -30dB
I.F.: 4.915MHz, 4-pole Cohn crystal filter
R.I.T. Range: +/- 2kHz at center of VFO tuning range
Audio output impedance: 8 to 320 (headphones only)

Quirks and limitations:

- there isn't enough AF output to drive a speaker--just headphones;
- the AGC range is limited (JFETs go nonlinear at some point) and you have to choose one of 3 supplied resistors during alignment;
- as with all NE602-based receiver designs, you *will* need the RF gain control once in a while;
- the VFO tuning range is only about 40 kHz using the varactor diode (presenting one of many opportunities for modification);
- there is a small "birdie" at 7.023 MHz can be easily subdued with a series LC circuit on the back of the board, as explained in the manual (parts supplied);
- there is no I.F. amp--not really needed on 40 meters--so modifying the rig for 20 meters or above isn't a good idea. 30 meters should work fine; replace all 6 of the 4.915MHz crystals in the rig with 8.000MHz crystals. 80-meter mod is even easier since you can use the same crystals.

The rig was designed by Wayne Burdick, N6KR. Please send mail to wayne@interval.com for design details.

From qrp-request@Think.COM Fri Dec 17 07:59:57 1993

Date: 17 Dec 1993 07:55:07 EST
From: "JHeise" <HARRIS.JHEISE@IC1D.HARRIS.COM>
Subject: NorCal 40: The Second Batch

It appears that several people did not get this as questions keep coming up. So, here it is again. Specs are at the bottom. I called Jim Gates and got on the list. I forgot to ask him when they expect to have the kits ready. Does anyone know?

Jan WA4VQD jheise@ic1d.harris.com

The NorCal 40 is back!

Many of you--including NorCal club members--asked about the NorCal 40 AFTER we had already sold all 100 of the kits. Since the response was so positive, we've decided to do another batch of 100.

The first batch of 100 taught us a lot about doing a big club project. Some of us went through two sets of tires and wore out our welcome looking for bargains at surplus stores, which was the only way to keep the cost low enough to offer the kits for \$75. This time, we're going to keep our social lives intact and buy almost all of the parts new, and consequently the price is going up \$14. This is still a bargain when you consider that the NorCal 40 is a complete superhet transceiver kit, with custom case, all controls and connectors, a really clean silk-screened PC board, and a complete assembly manual. (If the NorCal 40 becomes a commercial kit, it will sell for \$100 to \$120 depending on whether or not they use slave/child labor! We can sell it for less because we have a bunch of retired guys doing the kitting who promised thier wives exotic vacations after this is all over.)

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72/73,
Wayne Burdick, N6KR

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The rig was designed by Wayne Burdick, N6KR. Please send mail to wayne@interval.com for design details.

From qrp-request@Think.COM Thu Dec 16 08:45:08 1993
Date: Thu, 16 Dec 93 08:44:01 EST

From: jps@Kodak.COM (John Spoonhower)
Subject: Re: NorCal 40: The Second Batch

> From qrp-request@Think.COM Tue Dec 14 18:33:04 1993
> Date: Tue, 14 Dec 1993 14:33:32 -0800
> To: qrp@Think.COM, adams@chuck.dallas.sgi.com, dh@altair.csustan.edu,
> mvjf@mvubr.att.com
> Subject: NorCal 40: The Second Batch
> Cc: ciavarin@mother.millipore.com, wayne@interval.com
> X-Lines: 133
>
> The NorCal 40 is back!
>
> Many of you--including NorCal club members--asked about the NorCal 40 AFTER
> we had already sold all 100 of the kits. Since the response was so
> positive, we've decided to do another batch of 100.
>

I called Jim Cates last night and reserved a new NorCal 40. He mentioned to me that an upcoming issue of QRPP will contain articles on mods to this rig. In addition to band changes and higher power output, there is also the possibility of a digital frequency readout.
thought you all might like to know.

John Spoonhower, KC2DU, spoon@kodak.com

From qrp-request@Think.COM Thu Dec 16 18:08:59 1993
Date: Thu, 16 Dec 1993 18:05:59 -0500 (EST)
From: Robert Marlan <rsm@world.std.com>
Subject: Re: NorCal 40: The Second Batch

please give us a run down on what the norcal 40 is?
why is it so popular, and what makes it better than
all the other qrp kits
alsoo how do I order it? thanks
bob KA6NOC

From qrp-request@Think.COM Mon Dec 6 20:29:19 1993
Date: Tue, 7 Dec 93 12:24:44 EST
From: richard@dnd.icp.nec.com.au (Richard Urmonas)
Subject: NorCal membership

Could someone please post info on NorCal membership for Dx countries. I have seen postings for inside USA, but no Dx. Please post to the group as possibly some other people may be interested.

Thanks in advance.

73, Richard Urmonas VK3DRU
(in sunny Melbourne, Australia)

From qrp-request@Think.COM Mon Dec 6 20:44:37 1993
Date: Tue, 7 Dec 93 12:24:44 EST
From: richard@dnd.icp.nec.com.au (Richard Urmonas)
Subject: NorCal membership

From qrp-request@Think.COM Mon Dec 13 11:04:44 1993
Date: Mon, 13 Dec 1993 10:07:01 -0600 (CST)
From: "JEFF M. GOLD" <JMG@tntech.edu>
Subject: Norcal Revisited

Hi all,

Hope you had a good weekend. I had a REALLY hastled week last week, so decided to take a break from building, writing and fixing (except for putting together a Quad for a friend).

I hooked the Norcal up to a battery, then hooked up a Vibroplex bug. I love straight keys and use paddles, but never played with a bug. The bug is definetly a different kind of animal. Takes a little getting use to. Had to put a counter weight on the pack to get it to respond slow enough so that I could send in a manner that other could understand.

The Norcal was putting out about 1.8 Watts (the battery wasn't charged up). The bands in my area were horrible, lots of noise even on 20 meters. Kinda challenging conditions for QRP. I was once again amazed. the first cause of amazement was that I was able to get to the point where I could carry on a QSO using the bug.. liked it a lot. The second cause was that little old transceiver.

The Norcal is the smallest of all the transceivers I have built. Only worked with one smaller, Doug's NN1G in a teeney weeney case.. just big enough for the 2 boards.. have no idea how he crammed everything in the case, but you can store it in your pocket. The next up rig I have is the MFJs.. and the Norcal is significantly smaller.

The Norcal kinda reminded me of the MFJs in a way, but had some things I liked better. I made over 20 contacts as I remember. The amazing thing was that most of them were with guys running Japanese commercial rigs such as Icom 745s, Kenwood 850s and such. A good portion of them reported that the noise level in their area was so bad that they were

going to go off the air.

OK, now if the Norcal was putting out a signal that was just in the noise level, I could understand, but that wasn't what was reported. I got good signal reports, most around 559, but they were having bunches of trouble with the noise factor. I could hear a lot of noise on the band inbetween signals, when I tuned in a decent signal (449 or better) I just heard the signal, no noise, or not enough noise for me not to have a perfect copy. That is saying a bunch.. pretty impressive.

I checked out my MFJ afterward and one thing that really jumped out at me was the switching. I hadn't really been bothered by the relay switching in the MFJ before, but after spending the weekend with the Norcal, the relays annoyed me to no end. The changoever time for switching in each rig was about the same.. boy do I prefer the Norcal.

Think the Norcal would make an excellent commercial rig.

72

Jeff, AC4HF

From qrp-request@Think.COM Sun Dec 5 14:44:02 1993
From: "Kevin Anderson" <GGANDERSON@Augustana.edu>
Date: Sun, 5 Dec 1993 13:41:35 GMT-500
Subject: off vs. on-list messages (more net etiquette)

Let me follow Jeff's well-taken comments on net etiquette with an ethics comment of my own:

Please check the To: field of your messages and reply only pertinent list replies to the list. Please do not forward (or Cc:) personal replies to the QRP list.

Very often I will reply directly to a person if the comments I have might be construed as personal in nature or I deem the follow-up questions I am asking as not focused at the group as a whole. That is a personal decision I make to reduce mail traffic. I prefer not to see my personal remarks in a private (non-QRP list) message later reappear on the net in a reply or Cc: to the list. This has happened on several occasions, at it upsets me.

I don't know about your mail reading programs, but I can see whether a message was directed at the list (To: qrp@think.com) or to me personally. I take that as one distinction between levels of private and public messages that we are still able to have on the largely public-

natured Internet. I will not forward any message directed at me personally to anyone else without first obtaining the original authors permission, regardless of whether the content may pertain to a discussion at hand.

If you follow me, can someone now explain to me the tendency for a large number of us to Cc: everything to the list? Why send a reply directed at a person along with a Cc: of it? They'll get the list-aliased message regardless, and they don't need two copies.

Keep up the good work otherwise, I'm learning a lot about radio and QRP from you guys, the experts!

Cheers, Kevin, KB9IUA

```
*****
Kevin L. Anderson,      Geography Dept.,      Augustana College
Rock Island, Illinois  61201  USA      phone: (309) 794-7325
e-mail: gganderson@augustana.edu  or kla@helios.augustana.edu
*****
```

From qrp-request@Think.COM Sun Dec 5 04:00:27 1993
From: randy@cyphyn.radnet.com (Randy)
Subject: peg-board xmit
Date: Sun, 5 Dec 1993 03:56:21 -0500 (EST)

Yah..I know its late... but the parts were laying there staring me in the face, so I had to do it.

This one is built on peg board (very big perf-board)...just because!

No special layout , but the transistor I used...some unknown something... has a lot of stray uuf in it, so the 'missing' uuf's are not missing.
It has added-by-me 2" wires added for ease of hook up.

Its body is T0-220

```
      ---
    [_o_]   C 2075   ( salvaged from Ham Fest ) NPN
      |____|
      |____|   front view
      III
      b c e
```

150 MW xmit 80mtrs

```
      +-----)(-----+-----+-----+-----o +12vdc
      |                                     |         o - return
      |                                     |         |
  ##### .047 >                           |____ *         |
```


WAIT! STOP! Don't solder anything yet!

Had to make a bunch of changes....see mess below:

---snip 8=< -----

Pegboard xmit 1A (improved model)

80 meters...'half watt'

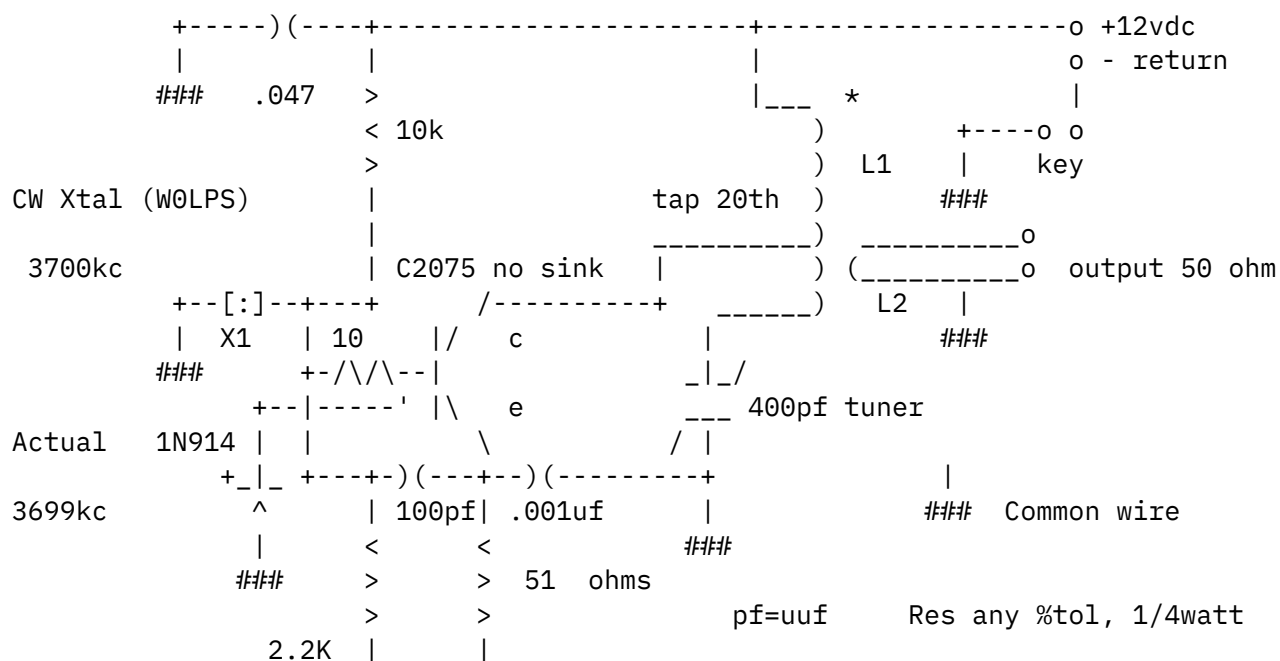
Its body is T0-220

```

      ---
    [_o_]   C 2075   ( salvaged from Ham Fest ) NPN
      |____|
      |____|   front view
      III
    b c e

```

700 MW xmit 80mtrs



From qrp-request@Think.COM Thu Dec 16 13:16:16 1993
From: randy@cyphyn.radnet.com (Randy)
Subject: pegboard xmit
Date: Thu, 16 Dec 1993 13:12:24 -0500 (EST)

Having gotten 2 contacts on 80 and 2 on 40mtrs with the 1/2 watt, 1 transistor PEGBOARD xmit, I gave it to N1KGY to REALLY give it a testing!

We have duplicate crystals (ordered 2 each) so, he'll be on either..

3685-6 3699-700 3709-10 or 7109-10 kc....the rig can move +/- 500cps.

As he is currently fixing his car (roasted the starter moter), he has no time to fling solder...and in his free time he'd rather be on the air...and so I get to hear it...and I get to proceed on the NEXT madness:

6AG7 1 tube xmit...also about 1/2 watt I expect (175v B+)....for which I await parts to arrive....

Due to lack of wood/salvage, I've been drinking as much coffee as possible, so as to empty that can....that nice empty can....easy to solder to.....

heh heh heh.

--

Randy KA1UNW	If you get a shock while	
	servicing your equipment,	"Works for me!"
randy@192.153.4.200	DON'T JUMP!	-Peter Keyes
	You might break an expensive tube!	

From qrp-request@Think.COM Wed Dec 8 11:41:29 1993
From: randy@cyphyn.radnet.com (Randy)
Subject: Pegboard Xmit, 40mtrs
Date: Wed, 8 Dec 1993 10:36:36 -0500 (EST)

Pegboard 1 transistor transmitter/changeodyne

Transistor used:

Its body is T0-220

[_o_]	C 2075 (salvaged from Ham Fest) NPN
_	front view
III	
b c e	

450 MW xmit 40mtrs

will usually land you just where you need to be.

C2..added to let me move up-freq (onto marked freq of xtal !) while on 80m, lets me move 900cps on 80M and almost 1200cps on 40M. That trick let me dodge the carrier ON 7110, from some BCB station.

I'll be on this thing this week ,daytime (obviously!) on 40M , and may later try 80M in late afternoons, evenings and past my midnite, as my work sked permits.

I do not plan to neatenize the rig....as its on a pegboard (GIANT perfboard) and intended to be buildable out of odd-ball parts,(rather than G-10 pcb and all that hard to get stuff)...like using T-paper tubing for coils, and a hunk of shingle for a PC board...hankybox cabinet....

I still await my FRS order, to make the 6AG7 xmit (which will sorta replace this one), so is why I persue this still.

--

Randy KA1UNW	If you get a shock while	
	servicing your equipment,	"Works for me!"
randy@192.153.4.200	DON'T JUMP!	-Peter Keyes
	You might break an expensive tube!	

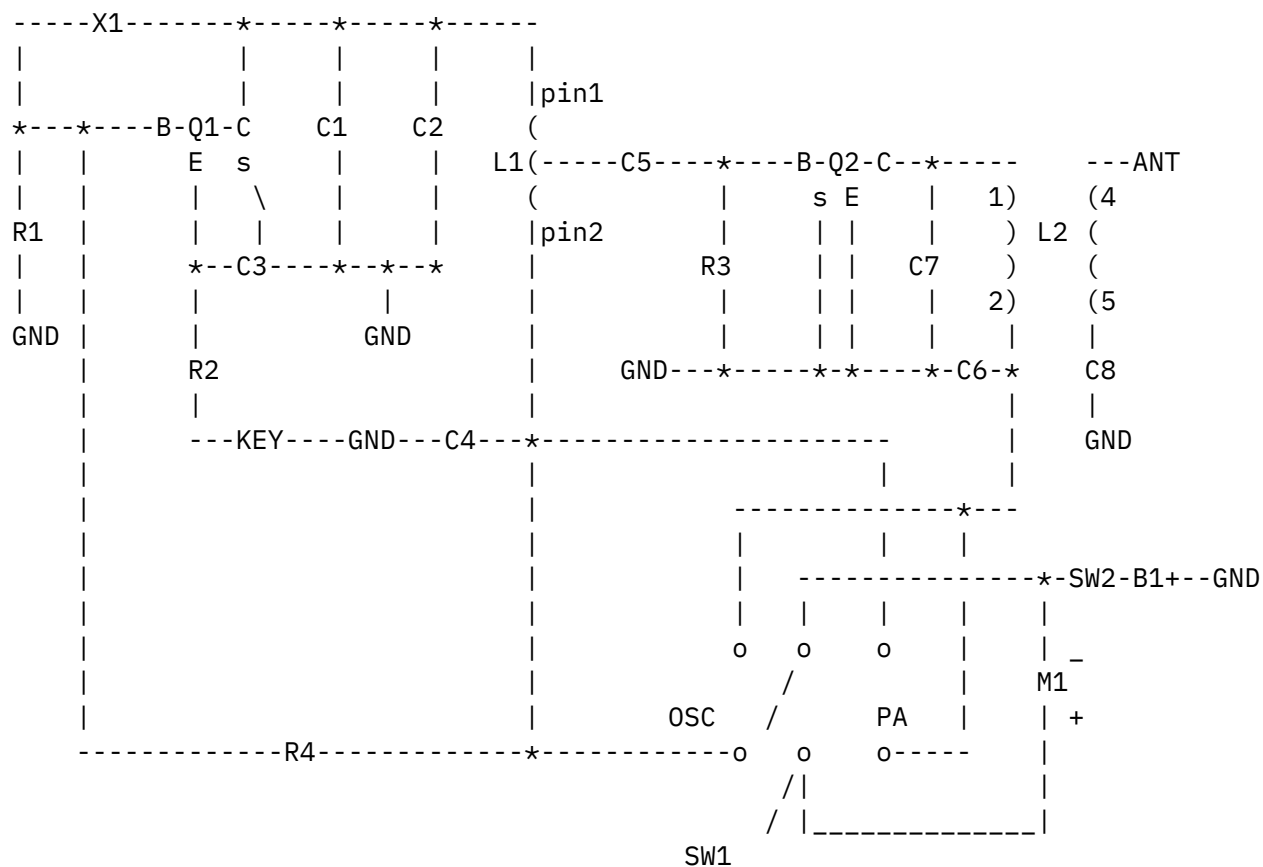
From qrp-request@Think.COM Sat Dec 4 20:22:49 1993
Date: Sat, 4 Dec 93 15:22:38 HST
From: Jeff Herman <jherman@uhunix.uhcc.Hawaii.Edu>
Subject: Project 11: 15M QRP xmtr

Here's a two transistor 15 meter xmtr gotten from Bert Simon's book 104 HAM RADIO PROJECTS (1968). Bert says: "As any novice knows, 15 meters is where the action is, at least if you're a DX addict. So, imagine the fun in telling your 1000-mile contact that you're running less than 1-watt into a 2-transistor rig. It is important that you use a miniature 5-prong coil form for L1. Follow the directions in the parts list to the letter. L2 is wound over the lower turns of L1, using the same coil form pin connections. As you can see in the schematic, the 40-meter crystal oscillator output is tripled to 15 meters.

"Tuneup is simple. Depress the key (intermittently to avoid damaging Q1-Q2), noting the meter reading. It should be 5-8 ma. (If it isn't, adjust C1 until this range is reached). Switching to the other meter position (PA), adjust C1 for maximum. Using an output bulb (neon or #49) adjust C8 for minimum capacitance. Now tune C7 for a meter dip to about 4.5 ma. While dipping C7, tune C8 for maximum bulb brilliance."

Parts List

Q1 2N247 PNP transistor
 Q2 2N372 PNP
 C1,7 15 pf variable capacitor
 C2 10 pf variable
 C3,4,5,6 .001 mf
 C8 50 pf variable
 R1 10K resistor
 R2 180 ohms
 R3 3.6K
 R4 51K
 B1 12VDC battery
 L1 Use 5 prong miniature coil form; 15 turns #20 insulated wire, tapped at 3 3/4 turns from the bottom. Top of coil should be connected to pin 1 of the base, bottom to pin 2, tap to pin 3.
 L2 Wound over L1 in same manner to same connections as above; 15 turns #20 insulated wire with a 4 3/4 turn link. One side of link goes to pin 4.
 X1 7 MHz 3rd overtone crystal
 M1 0-10 DC milliammeter
 SW1 DPDT
 SW2 SPST



Notes: Q1 and Q2 have a marking: (s) on the schematic which appears to be the case of the transistors - on both cases (s) goes to ground. The numbers next to L1 and L2 are the pin numbers of the coil form. The wiring for SW1: If 3 or more wires meet without the junction symbol * then there is a 'jump' (no connection). The positive terminal of B1 goes to ground. The usual warning applies here as with the other 9 transmitters: these circuits are old - tighter emission standards are in effect now that weren't when these were first published; make sure you signal is 'clean' by applying proper filtering if necessary.
.... .- ...- . ..- ..- -.

Jeff NH6IL (ex: WA6QIJ)
Jeffrey Herman, University of Hawaii Department of Mathematics
jherman@hawaii.edu jeffrey@math.hawaii.edu

From qrp-request@Think.COM Fri Dec 10 09:09:53 1993
Date: Fri, 10 Dec 1993 08:11:56 -0600 (CST)
From: "JEFF M. GOLD" <JMG@tntech.edu>
Subject: QRP .. battery

> Hi all,
>
> Does anyone have experience powering a qrp rig from their
> car's battery? While the car isn't running? Due to evil
> condo covenants, my best bet for a good antenna and operating
> site seems to be to drive to the top of a hill and set up
> my vertical.
>
> I figure I could save some money by using my car's battery
> instead of buying a gel cell, but I'm not sure if the drain
> would be too much for it. I know you need one of those "deep
> discharge" batteries for higher-power use, but since I'm
> operating qrp cw I'm hoping that doesn't apply here.
>
> Any thoughts?
>
> 73,
>
> Joe Gervais jgervais@ucsd.edu
> KD6PRD/AG "20 WPM or Bust!"

Well, I operate of hours at lunch periods and on tops of mountains with my 509 argonaut.. both CW/SSB and have no problem with the car off.. I also use a small 4ah gel cell that I picked up at a ham fest for \$5.00

and that will run for hours with my small CW transceivers.. I have gone for days with the 7ah battery.

Many times in the Smokeys I will have a few QRP transceivers in a case and bring my portable PVC vertical and pull over and operate using a small gel cell.

72

Jeff, AC4HF

From qrp-request@Think.COM Thu Dec 9 18:47:55 1993
Subject: Re: QRP and car battery
Date: Thu, 09 Dec 1993 15:47:46 -0800
From: Clark Savage Turner WA3JPG <turner@safety.ICS.UCI.EDU>

Well, Joe....this might be one for the famous QST author (and authority) Jeff Gold. He thinks about this stuff, and has done quite a bit of QRP mobiling. I have operated QRP from my car with my Argonaut much like Jeff describes in his article.

In my own experience with the Argonaut (and a few simpler rigs), that draw less than 1 amp on transmit, most car batteries can handle it all day....or longer. I suspect you can calculate how much of 1 amp intermittent drain the common car battery can handle, but suffice it to say that I have done it for 3, 4 hours or more with absolutely no problems. I operated field day with a small spare car battery that I use when my installed car batteries fail. I used it for the whole time with my Argonaut, SSB, probably 10 hours or more. When I took it home, I used it to start a car. It is NOT a special battery, and is not large or expensive.

Good luck.

Clark

.....

Clark Savage Turner, Graduate Student Researcher
Safety Critical Software Group home:
Department of Info. and Computer Science 1514 Verano Place
Irvine, CA. 92717 Irvine, CA. 92715
(714) 856 4049 (714) 856 2131

WA3JPG, QRP #3526, active on HF, VHF and UHF.
Admitted to practice law in California, Massachusetts, and New York.
ARRL Volunteer Counsel

From qrp-request@Think.COM Thu Dec 9 17:03:07 1993

Date: Thu, 9 Dec 1993 14:03:03 -0800
From: Joe Gervais <jgervais@weber.ucsd.edu>
Subject: QRP and my car's battery

Hi all,

Does anyone have experience powering a qrp rig from their car's battery? While the car isn't running? Due to evil condo covenants, my best bet for a good antenna and operating site seems to be to drive to the top of a hill and set up my vertical.

I figure I could save some money by using my car's battery instead of buying a gel cell, but I'm not sure if the drain would be too much for it. I know you need one of those "deep discharge" batteries for higher-power use, but since I'm operating qrp cw I'm hoping that doesn't apply here.

Any thoughts?

73,

Joe Gervais jgervais@ucsd.edu
KD6PRD/AG "20 WPM or Bust!"

"The largest hack begins with a single kludge."
- Not quite Confucious

From qrp-request@Think.COM Thu Dec 9 21:14:22 1993
From: andrews@fms.com (Andrew Sargent N80FS)
Subject: Re: QRP and my car's battery
Date: Thu, 9 Dec 1993 21:11:42 -0500 (EST)

> Date: Thu, 9 Dec 1993 14:03:03 -0800
> From: Joe Gervais <jgervais@weber.ucsd.edu>
> Message-Id: <199312092203.0AA09957@weber.ucsd.edu>
> To: qrp@Think.COM
> Subject: QRP and my car's battery
> Content-Type: text
>
> Hi all,
>
> Does anyone have experience powering a qrp rig from their

> car's battery? While the car isn't running? Due to evil
> condo covenants, my best bet for a good antenna and operating
> site seems to be to drive to the top of a hill and set up
> my vertical.

>

Yea, I operate QRP mobile all the time because of some of the considerations you mentioned. If your Alternator is bigger than 50 Amps, and your Battery is a Delco bigger than 750CCA, you will have no difficulties operating for 8 hours+ without starting the car. QRP mobile is great!!!

>

> I figure I could save some money by using my car's battery
> instead of buying a gel cell, but I'm not sure if the drain
> would be too much for it. I know you need one of those "deep
> discharge" batteries for higher-power use, but since I'm
> operating qrp cw I'm hoping that doesn't apply here.

>

> Any thoughts?

>

> 73,

>

> Joe Gervais jgervais@ucsd.edu

> KD6PRD/AG "20 WPM or Bust!"

>

72 de N80FS\AAN5HJT

--

Mesmerized by a decade of hate,	! AMATEUR =	N80FS
Flowers and remorse,	! ARMY MARS =	AAN5HJT
Fading vision lost in time,	! CB =	THE NEON KNIGHT
Tragedy on course!!! - Frontline Assembly	! HACKER =	TH3 N30N KN16Ht

From qrp-request@Think.COM Sun Dec 5 19:17:23 1993

Date: Sun, 5 Dec 93 16:16:44 PST

From: dh@deneb.csustan.edu (Doug Hendricks)

Subject: QRP Quarterly, How to Subscribe

To subscribe to the QRP Quarterly, the Journal of the Amateur Radio Club International, ARCI, send your Name, Call, Address and \$12 USA or \$14 DX for new members, and \$10 US \$12 DX for renewals. Once a member, always a member, so if your dues have lapsed, send the lower amount. Check or MO payable in U.S. Funds to QRP-ARCI. Do not send cash.

Mail to: Mike Kilgore, KG5F
2046 Ash Hill Road
Carrollton, TX 75007

This is a great investment. I recommend it highly. 72, Doug, KI6DS.

From qrp-request@Think.COM Mon Dec 6 10:00:47 1993
Date: Mon, 06 Dec 93 14:41:21 GMT
From: jkearman@arrl.org (Jim Kearman)
Subject: QRP Sprint

Operated from WA1MBK on 80-40-20-15. I think 34 QSOs. No
K5F0, though....

From qrp-request@Think.COM Mon Dec 13 00:51:35 1993
From: andrews@fms.com (Andrew Sargent N8OFS)
Subject: QRP|ASCII QRP Rigs...
Date: Mon, 13 Dec 1993 00:48:56 -0500 (EST)

Hello all, just wanted to thank Jeff Herman and Randy for the qrp
rigs that they posted and sent to me.

I'm still looking for more...

--
Mesmerized by a decade of hate, ! AMATEUR = N8OFS
Flowers and remorse, ! ARMY MARS = AAN5HJT
Fading vision lost in time, ! CB = THE NEON KNIGHT
Tragedy on course!!! - Frontline Assembly ! HACKER = TH3 N30N KN16Ht

From qrp-request@Think.COM Wed Dec 8 15:27:23 1993
Date: Wed, 08 Dec 1993 14:29:30 -0600 (CST)
From: "JEFF M. GOLD" <JMG@tntech.edu>
Subject: Radio Kits

> From: IN%"khk@raster.Kodak.COM" "Karl Heinz Kremer QA" 8-DEC-1993 14:17:06.00
> To: IN%"qrp@Think.COM"
> CC:
> Subj: Radiokit kits
>
> QRP-20 transceivers. I looked through the mailing list archive on
> think.com, but apparently nobody ever wrote about these rigs (or
> my grep is not working properly).
>
> So, who can tell me something about these devices?
>
> 73
> Karl Heinz
>

Well, from the description it sounds like an MFJ that has the audio

filter built in and not optional in a smaller case.

I ordered a 20 meter version yesterday and will let everyone know more when I get the kit.

72

Jeff, AC4HF

From qrp-request@Think.COM Wed Dec 8 16:40:03 1993
Subject: Re: Radio Kits
Date: Wed, 08 Dec 93 16:38:54 EST
From: "John F. Woods" <jfw@ksr.com>

Is Radiokit's address still "P.O.Box 973, Pelham NH 03076"? If they've sent me a catalog, it will have been to my old address and won't get forwarded since it's probably 4th class mail, and I want to make sure I get a catalog before they run out again for two years....

From qrp-request@Think.COM Wed Dec 8 13:29:03 1993
Date: Wed, 8 Dec 1993 13:29:00 -0500
From: Karl Heinz Kremer QA <khk@raster.Kodak.COM>
Subject: Radiokit kits

I just got a Radiokit flyer, in which they advertise their QRP-15 and QRP-20 transceivers. I looked through the mailing list archive on think.com, but apparently nobody ever wrote about these rigs (or my grep is not working properly).

So, who can tell me something about these devices?

73

Karl Heinz

--

Karl Heinz Kremer Performance Technology & Evaluation
Eastman Kodak Company, Department 294, 901 Elmgrove Road
Rochester, NY 14653-5810, USA FAX: +1-716-726-0374
EMail: khk@raster.kodak.com Phone: +1-716-726-7882

From qrp-request@Think.COM Fri Dec 10 15:16:22 1993
From: majec@cactus.org (Majec Systems)
Subject: repeat of question
Date: Fri, 10 Dec 1993 14:16:14 -0600 (CST)

I will try again because i got no response last time. If no one answers this time i will just do it, but be warned the universe as we

know it could be changed for ever.

To the qrp group:

A question. I am about to build a 4 to 6 watt amp, the design of which comes from page 61 of the Solid State Design book by the ARRL. They call for a GE D446C transistor, and suggest a 2n5321 as a replacement worth experimenting with. Well being very new to this hobby I am not sure if the design of the amp is highly dependent on the characteristics of those particular devices or can I substitute another device. If any of you are familiar with the amp design please make some suggestions for replacement transistors for me.

Thanks

Ed Guinn
kb5ruf
majec@cactus.org

From qrp-request@Think.COM Fri Dec 10 22:14:36 1993

From: laurahal@microsoft.com

Subject: RE: repeat of question

Date: Fri, 10 Dec 93 13:31:00 PST

Ed Guinn asks:

> A question. I am about to build a 4 to 6 watt amp,
> the design of which comes from page 61 of the Solid State Design book
> by the ARRL. They call for a GE D446C transistor, and suggest a 2n5321
> as a replacement worth experimenting with. Well being very new to this
> hobby I am not sure if the design of the amp is highly dependent on
> the characteristics of those particular devices or can I substitute
> another device...

Things aren't as critical at HF as they are at VHF and UHF.

Buy/beg/borrow/steal a transistor data book and have a look. You want to match or exceed the D446C's dissipation, get reasonably close on its beta (H_{fe}), get the capacitances reasonably close, and match or exceed (but not by too much) f_t . Make sure the various breakdown and bias voltages are reasonably close, and try it and see.

Try not to spend too much for the transistor you use, so you won't be out too much if you blow it up.

Matching or exceeding the dissipation is self-explanatory. Matching beta and f_t makes sure that you have the right gain at the right frequency, so that

the amplifier remains as stable as the original. Ditto the capacitances to get impedances and feedback right.

W1FB's Design Notebook is another good reference on this and many other issues.

While we're talking about books, any suggestions on a good place to buy goodies like those Motorola RF devices data books everybody keeps referring to?

73 from Burnaby,
laura VE7LDH

From qrp-request@Think.COM Sat Dec 11 09:36:42 1993
Subject: Re: repeat of question
Date: Sat, 11 Dec 93 09:35:36 EST
From: "John F. Woods" <jfw@ksr.com>

> While we're talking about books, any suggestions on a good place to buy
> goodies like those Motorola RF devices data books everybody keeps referring
> to.

The ideal case is to get them free from motorola, but JDR Microdevices has them, US\$16.95 for the set. +1-800-538-5000 continental US, +1-408-559-1200 for local (San Jose, CA) and international. (And +1-408-559-0250 for any international members of the list who are so far away in time zones that the FAX number is handier.)

From qrp-request@Think.COM Wed Dec 8 12:36:53 1993
Date: Wed, 8 Dec 93 12:34:49 EST
From: servidio@PICA.ARMY.MIL
Subject: REQUEST FOR SUBSCRIPTION TO THE QRP NEWS LETTER:

Dear Sirs,

Please send me a subscription to your QRP News Letter. Thank you.

Art Servidio

servidio@PICA.ARMY.MIL

From qrp-request@Think.COM Wed Dec 8 14:41:02 1993

Date: Wed, 8 Dec 1993 14:41:08 -0500
From: drs@rs2.ccd.harris.com (Doug Snowden)
Subject: SBL-1 Mixers

I believe I posted a suggestion that we get together and buy \$50 worth of these (I think the minimum order). Not hearing anything, has anyone got two of these dudes to sell me so I can start on my W7Z0I receiver? If not, I'll go ahead and pay too much for them. Now don't you guys come back and suggest that I make my own mixers. I know how to do that. I finally got a nice air variable from a BC221 for the VFO.

73's Doug, N4IJ drs@ccd.harris.com

From qrp-request@Think.COM Wed Dec 8 15:09:51 1993
Date: Wed, 8 Dec 93 12:09:44 PST
From: sjhawk2@srv.PacBell.COM (Stephen Hawkins)

I am new to the group so forgive me if this is a stupid question.
How do I contact Norcal for membership?
Thanks Steve Hawkins WV6U sjhawk2@srv.pacbell.com

From qrp-request@Think.COM Thu Dec 9 21:34:53 1993
From: jjw@seastar.org (John Welch)
Subject: Re: SBL-1 Mixers
Date: Thu, 9 Dec 1993 08:07:49 -0600 (CST)

I've got a few SBL-1s. If you can't find one, drop me a note.
--
John Welch, N9JZW

From qrp-request@Think.COM Mon Dec 6 13:26:16 1993
From: laurahal@microsoft.com
Subject: SCAF audio filters?
Date: Mon, 06 Dec 93 10:21:00 PST

I'm making phone calls to try to track down the AMI chips used in the Super SCAF audio filter in the back of QRP Classics (among other places), and wondered if any QRPers had built one and had any words of wisdom to share?

And if anybody has current information on where to buy the chips, I'd really appreciate it; several local (Vancouver, B.C.) suppliers have the S3528 low-pass filter, but nobody seems to have the S3529 high-pass filter. Silicon General seem to have cloned the chips, but nobody seems to have the SG3529 version either.

If I can lay my hands on the chips, the price/performance sounds impressive...

73 from Burnaby,
laura VE7LDH

From qrp-request@Think.COM Mon Dec 6 15:40:15 1993
Date: Mon, 6 Dec 93 15:28:18 EST
From: epacyna@auratek.com (Edward Pacyna)
Subject: Re: SCAF audio filters?

>I'm making phone calls to try to track down the AMI chips used in the Super
>SCAF audio filter in the back of QRP Classics (among other places), and
>wondered if any QRPers had built one and had any words of wisdom to share?
>
>And if anybody has current information on where to buy the chips, I'd really
>appreciate it; several local (Vancouver, B.C.) suppliers have the S3528
>low-pass filter, but nobody seems to have the S3529 high-pass filter.
>Silicon General seem to have cloned the chips, but nobody seems to have the
>SG3529 version either.
>
>If I can lay my hands on the chips, the price/performance sounds
>impressive...
>
>73 from Burnaby,
>laura VE7LDH
>
I got them from Active Electronics. They have offices throughout the US and Canada.

You can run these without the +/- 5V. A 12V supply can be used if you use an artificial ground (very common technique with op amps).

73

Ed W1AAZ

From qrp-request@Think.COM Mon Dec 6 17:13:58 1993
From: laurahal@microsoft.com
Subject: RE: SCAF audio filters?
Date: Mon, 06 Dec 93 14:04:00 PST

An earlier plaintive plea:

> And if anybody has current information on where to buy the chips, I'd really

> appreciate it; several local (Vancouver, B.C.) suppliers have the S3528
> low-pass filter, but nobody seems to have the S3529 high-pass filter.
> Silicon General seem to have cloned the chips, but nobody seems to have
the
> SG3529 version either.

SUCCESS!!!!

For the benefit of other interested QRPers, A&A Engineering (714-952-2114)
have these goodies in stock. The S3528 and S3529 are both \$6.50 each. They
used to sell complete Super-SCAF kits, and may start doing so again if
prodged hard enough. Their credit card minimum is \$20, but since I can think
of *lots* of things I can do with high-Q low pass audio filters (a Weaver
SSB exciter, among other things), I ordered three S3528s and one S3529.

Now to put the rest of the thing together...thanks to all who replied and
offered suggestions.

73 from Burnaby,
laura VE7LDH

From qrp-request@Think.COM Tue Dec 14 11:31:12 1993
Date: Tue, 14 Dec 93 10:31:04 -0600
From: adams@chuck.dallas.sgi.com (Chuck Adams)
Subject: Schematics

Someone sent me a note about the schematics, version 1, and the
status of their check.

For my Christmas present from me to you, I will not cash any of
the checks and consider it Christmas morning. I will mail them
back to you though. I just sat on them too long and I apologize
for the delay. I didn't have anything to spend the money on anyway. :-)

NOT.

dit dit
SIG
-----cut here-----
Chuck Adams, K5FO - CP60
adams@sgi.com
QRP ARCI Awards Chairman

From qrp-request@Think.COM Fri Dec 17 14:37:58 1993

From: randy@cyphyn.radnet.com (Randy)
Subject: Re: Soldering Aluminum Cans
Date: Fri, 17 Dec 1993 14:33:56 -0500 (EST)

I take it, you mean engine oil?

...and yes, by all means, remove the beer first!

I take it , too, a soda can (of which there are more of around here) would do as well?

I had read in Popular Science/Mechanics...1960's(?)...that one can solder aluminum....the article was about making an out-door lamp.

Using a glass-fibre(?) brush, to work-in the solder, it would stick....thus tinning the 2 metals...then the 2 were sweat soldered like you'd do a copper pipe-joint.

The oil part...hmmm...sounds like whats going on is that it keeps air from getting at the 'exposed' aluminum....liquid TIG or MIG welding !

Contadina Tomatoe Paste cans...quite small..1.75 oz I think....make for great, solderable IF and RF xformers.....is what I used them for to replace wooked ones in old, too-far-gone-to-restore-to-classic-condition,-but-good-to-use-and-SWL-with radios.

Those APC series trimm caps just fit neatly, and space to stick in a coil under it...to make a tank ckt with.

All my cans, I've used like that, I'd either paint ...or tin with solder...as the metal rusts fairly quick....

Had a solder-pot...and I'd save all my spent solder..any removed during a rebuild..and remelt it...skim off the glop on top and just prior to a dip, I'd smear flux on the can (or other victem)...plunge and duck the stink.

OSHA would LOVE me!

--

Randy KA1UNW
randy@192.153.4.200

If you get a shock while
servicing your equipment,
DON'T JUMP!
You might break an expensive tube!

"Works for me!"
-Peter Keyes

From qrp-request@Think.COM Thu Dec 16 15:11:53 1993
Date: Thu, 16 Dec 93 10:11:29 HST
From: Jeff Herman <jherman@uhunix.uhcc.Hawaii.Edu>

Subject: Soldering cans

Randy raises an interesting question: What types of food cans are the easiest for solder to adhere to? I can't imagine a better RF shield than a can with its top reattached.

Jeff NH6IL

From qrp-request@Think.COM Thu Dec 16 17:46:32 1993
Date: Thu, 16 Dec 93 14:45 PST
From: Michael Stein <OSYSMAS@MVS.OAC.UCLA.EDU>
Subject: Soldering cans

> Randy raises an interesting question: What types of food cans are
> the easiest for solder to adhere to? I can't imagine a better RF
> shield than a can with its top reattached.

I haven't had much of a problem solder cans as long as I got the spot hot enough (tin cans).

I once built a one fet LC oscillator on a tin can lid and then soldered a round tuna tin over it (the lid was larger than the diameter of the tuna can). So this was completely sealed except for the soldered in feedthrough capacitor for V+ power (case was gnd).

The oscillator was audible on the receiver (ie: not completely shielded). This was about 20 Mhz. It was also possible to hear the frequency shift as the can was squeezed.

All in all, I'm not that excited about tin cans...

PS: I'd guess most (all?) of the leakage was via the feed through capacitor. The power available inside the case was at most 10 mW, however the minimal detectable leakage would probably be around -150 dBm which is much much less than 10 mW (+10 dBm).

From qrp-request@Think.COM Thu Dec 16 17:28:29 1993
From: randy@cyphyn.radnet.com (Randy)
Subject: Re: Soldering cans
Date: Thu, 16 Dec 1993 17:24:38 -0500 (EST)

>
>
> Randy raises an interesting question: What types of food cans are
> the easiest for solder to adhere to? I can't imagine a better RF

> shield than a can with its top reattached.

>

> Jeff NH6IL

>

Coffee cans Bean cans , are (right now) the only ones...while tuna fish cans are made of...Japanesium? ...some mix of 20 different metals, and it acts like aluminum and stainless steel....can't solder it...

BUT ya can pick it up with a magnet...somewhat....and it will rust.

Some metals have a coating that has to be sanded (NOT wire-wheeled) off to be able to solder to it.

Beer cans are aluminum...no way to solder that...and its too thin for any but as a stick-on shield where the can only supports itself.

(I have a Contadina tomato paste can tube shield in the collins to ward off heat from affecting the auto-key set up...like a chimney...with holes at the bottom to let in fresh air...can's diameter is enough so air passes up along side the tube (audio output) and out the screened top of cabinet)

If can is sanded after getting holes put in and all, it can be painted and look almost like it was meant to be an electronic part....I had more home wound xformers/ rewound ones that I 'potted' into bean cans and such....

Use rustoleum paint...not that yucky latex stuff.

--

Randy KA1UNW

If you get a shock while
servicing your equipment,
DON'T JUMP!

"Works for me!"

randy@192.153.4.200

-Peter Keyes

You might break an expensive tube!

From qrp-request@Think.COM Fri Dec 17 06:42:47 1993

Date: Fri, 17 Dec 1993 06:42:24 -0500

From: Brad Mitchell <bmitchel@CBA.Kodak.COM>

Subject: Re: Soldering cans

> Beer cans are aluminum...no way to solder that...and its too thin for any

> but as a stick-on shield where the can only supports itself.

>

You haven't made it in our club as a QRP expert until you solder a beer can!

First... get a soldering GUN. Clean a spot on any aluminum beer can. Put a drop of oil on the clean spot, and heat hot with the gun. Then once hot, tin with regular solder, then put the wire on the can! Walah!!!

No this isn't a joke, I've done it with wire bradi, and it held so strong that when I finally pulled it off the beer can it ripped a hole in the side.

Now, I will say that I have done this consistently, but many have tried, and not succeeded! The trick to it is, first empty the beer can..

73 all Brad WB8YGG

From qrp-request@Think.COM Fri Dec 17 11:30:39 1993
Date: Fri, 17 Dec 93 08:22:55 PST
From: mont@ibmmail.COM
Subject: Re: Soldering cans

From: Brad Mitchell <bmitchel@CBA.Kodak.COM>

> No this isn't a joke, I've done it with wire bradi, and it held so strong that
> when I finally pulled it off the beer can it ripped a hole in the side.
>
> Now, I will say that I have done this consistently, but many have tried, and
> not succeeded! The trick to it is, first empty the beer can..

Is it important WHEN you empty the beer can? For example, do you need to empty it just prior to attempting to solder to it so that you'll be in the right frame of mind? If so, then will emptying 2 or 3 make it even easier to solder to first one?

I just had to ask...

73,
Mont, km6wt

From qrp-request@Think.COM Sun Dec 5 23:32:58 1993
Date: Sun, 5 Dec 93 22:32:43 -0600
From: adams@chuck.dallas.sgi.com (Chuck Adams)
Subject: Sunday Sprint

Gang,

Worked 20M for first hour of the test on Dec 5th, the QRP ARCI Sprint started at 2000Z (2000UTC). :-) Band was in sad shape. Worked only

10 contacts, one of which was the famous contest operator, Pete VE5VA, a member of this group.

Went up to 15M for 15 minutes and worked Pete again. He had a few more qsos than I did and he said bands were in sad shape in SK land too.

Let's see now, I've worked him on 40, 20, and 15. Maybe we can start a five band award or something. I'll be at the antenna farm 'til Jan 24th, so any skeds wanted, I'll try to oblige for 40, 30, and 20M. You can hear a K5FO Special at work. Laying out the PC board over the next week or so, as time permits.

I do slow down and I'll move up to the novice band(s).

dit dit

SIG

-----cut here-----

Chuck Adams, K5FO - CP60

adams@sgi.com

QRP ARCI Awards Chairman

From qrp-request@Think.COM Tue Dec 7 10:54:13 1993

Date: Tue, 7 Dec 93 10:38:04 EST

From: dpt@ri.cadre.com (Dan P. Trainor)

Subject: Re: Sunday Sprint

>running the NN1G at 0.95W

>wid 800 ft long wire. QSL in the mail.

>

>Thanks for RI with QRPp. I'll do the calculations, sure we did

>more than 1,000mi/watt and I'll send you a certificate for same.

>

Chuck,

Thanks for the contact. You had a great signal here in RI for only 0.95 W output!

Hope

to work you again on 40 meters. My QSL address is:

Dan Trainor

154 McCorrie Lane

Portsmouth, RI 02871

~~~~~

Dan Trainor  
Cadre Technologies Inc.  
222 Richmond St.  
Providence, RI 02903

Internet: dpt@cadre.com  
Voice: 401-351-5950  
Fax: 401-455-6800  
Morse code: KB1JX

~~~~~

From qrp-request@Think.COM Wed Dec 8 16:42:04 1993
Date: Wed, 8 Dec 1993 16:40:59 -0500
From: ak238@yfn.ysu.edu (Keith M. Hamilton)
Subject: Tejas Backpacker II

I am looking for input on the Tejas Backpacker II transceiver. It was reviewed quite favorably in the October 73 Magazine and the November QST. I like the idea of 200khz tuning range although I was looking for a superhet receiver to build. Perhaps I should get just a receiver kit first? Your help would be appreciated!

Thanks from a newcomer to QRP and this mail list!

--
Keith M. Hamilton 73 de N08Z
ak238@yfn.ysu.edu
Youngstown, Ohio

From qrp-request@Think.COM Thu Dec 9 20:56:59 1993
From: andrews@fms.com (Andrew Sargent N80FS)
Subject: test, ignore
Date: Thu, 9 Dec 1993 20:54:00 -0500 (EST)

TEST!!!

(something is not right here...)

--
Mesmerized by a decade of hate, ! AMATEUR = N80FS
Flowers and remorse, ! ARMY MARS = AAN5HJT
Fading vision lost in time, ! CB = THE NEON KNIGHT
Tragedy on course!!! - Frontline Assembly ! HACKER = TH3 N30N KN16Ht

From qrp-request@Think.COM Thu Dec 9 19:42:14 1993
Date: Thu, 9 Dec 93 19:42:11 EST
From: Mark Shelhamer <ms@space.mit.edu>
Subject: Thanks and parts source

QRPers:

Thanks to all who have responded to my previous questions about varactors in VFOs and suggestions on kits to buy. My Christmas wish list will be all the better for your information.

I have come across a source for some relatively obscure items:

DC Electronics, PO Box 3203, Scottsdale, AZ 85271-3203

800-467-7736

800-423-0070

602-994-1707 FAX

602-945-7736 Local

I have the 1992 catalog, but I just called them and many of the prices have not changed since then. Among other things, this place carries the coveted SBL-1 balanced modulator (\$6.95). Also toroids, NE602, and various PLL, VCO, and Rx subsystem ICs. A very nice selection for homebrewers. Minimum on phone orders "nominally" is \$15. No min on prepaid orders. Credit cards OK (\$15 min). I always seem to get the same gentleman on the phone each time I call; he is helpful and knows the stock, but he would not win the Mr. Congeniality award.

Has this place been mentioned here before?

Mark WA3YNO

From qrp-request@Think.COM Mon Dec 13 15:58:18 1993

Date: Mon, 13 Dec 93 15:58:15 -0500

From: wb9omc@ecn.purdue.edu (Duane P Mantick)

Subject: this weekend

Several people asked about the weekend contest (what the heck WAS that contest, BTW?) and propagation.

I spent a little time yesterday on 10M. Early in the day, around noonish, it stunk. Propagation from my QTH (central Indiana, apartment, antenna in attic) didn't exist.

I tried again around 5 PM and was rewarded with the band seeming to be fairly open (for about the first time this fall that *I* have heard).

And oddly enough, instead of the usual afternoon-to-the-west-only propagation, I also was hearing from the northeast (Maine, New York, New Jersey basically all of New England), the near south (both Norht and South Carolina) and VERY oddly, both Ontario and Quebec, Canada.

I have NEVER, EVER worked Ontario or Quebec from my QTH before this weekend. I get lots of VE5, VE6 and VE7 (mostly VE7).

There was the usual s***load of California stations. :-)

I heard some from the US Northwest but not a lot.

A further oddity was that very little was heard from the southwest direction. Not a single Texas, Arizona or New MExico did I hear. Did hear one Louisiana.

Band was pretty good until about 2330 UTC or so, and then the bottom pretty much fell out in a matter of about ten minutes. After that there'd be the occasional fade-in, fade-out but no real decent signals.

10 meters is decidedly following the down-trend in the sunspot cycle that has been predicted. I can't even recall the last time I heard a station from Japan.

(And I really NEED a Japanese station with a 10-10 number, so I can use Asia to complete my 10-10 Worked All Continents award)

I did hear some medium-short skip from Pennsylvania. I could use some SHORT-short skip from Illinois, Michigan and Ohio. Those are the only three states I need for 10-10 Worked All States.

Well, what the heck. I only need a few more countries to get the basic 10-10 Countries Certificate, for working 10-10 members in 25 countries.

All this on about 10 watts. Who says you need big power to work DX? Humbug! :-)

Now, we got any Michigan, Illinois or Ohio 10-10ers on this list????????? :-)

Duane
WB9OMC

From qrp-request@Think.COM Mon Dec 13 20:08:50 1993
Date: Mon, 13 Dec 1993 20:08:45 -0500
From: david jerome adams <djadams@silver.ucs.indiana.edu>
Subject: Re: this weekend

Duane,

I also live in an apartment iin central indiiiana and found the band VERY open from about 11am on....I was able to hit the netherlands, honduras and mexico (and es...loads of CA...wh is it we cant seem to get east?).

Incidentally, what is a 10-10 award?

Dave

From qrp-request@Think.COM Thu Dec 9 14:36:47 1993
Date: Thu, 9 Dec 93 14:37:04 EST
From: doug.snowden@ccd.harris.com (Doug Snowden)
Subject: unsubscribe

For the time being, I have too much email to deal with, so please unsubscribe me. This is probably the wrong address to accomplish this.

73's Doug, N4IJ

From qrp-request@Think.COM Fri Dec 17 14:39:17 1993
Date: Fri, 17 Dec 93 14:19:17 EST
From: dpt@ri.cadre.com (Dan P. Trainor)
Subject: Unsubscribe

Could you please take me off the list?

dpt@cadre.com

From qrp-request@Think.COM Sat Dec 4 17:56:33 1993
Date: Sat, 4 Dec 93 14:55:40 PST
From: dh@deneb.csustan.edu (Doug Hendricks)
Subject: Update To QRP Quarterly Index

Gang, I have updated the cumulative index to the ARCI QRP Quarterly. The Index is for the years 1985 to 1993 (present) and includes all large format editions. I have attempted to index everything, from letters to the editor, to individual items in The Idea Exchange. It is long, so be ready. Hope you enjoy. 72,
Doug, KI6DS

Preface: This index was done by KI6DS, Doug, who makes it available to all

QRPers. Hopefully you will find it useful and handy as I have. I suggest that you put it in your word processor and use the search feature to find keywords. The categories are rather broad, but necessarily so. I will do updates each year and make them available. If you would like to have reprints of back issues, I have them available for \$10 per year, plus \$3 postage per order. I have the years 1985 - 1993. If you order all 9 years, there is a special price of \$83. Each year is bound in 1 book, so please do not ask for individual issues, i.e. April 88, as I cannot make them available that way. Please feel free to distribute this to anyone as long as it is not used in any way to make money.

My address is: Doug Hendricks

KI6DS
862 Frank Ave.
Dos Palos, CA 93620
209-392-3522

Best 72, Doug

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Ok, guys and gals, Enjoy....72, Doug, KI6DS

From qrp-request@Think.COM Mon Dec 13 12:40:28 1993
Date: Mon, 13 Dec 93 10:40:09 MST
From: Doug Datwyler <datwyler@moons.sim.es.com>
Subject: v1 and v2 of QRPP

I am still waiting for someone to copy. The person who responded that he would when unoccupied, could you please respond back to me? TNX.

72/73 Doug Datwyler WR7O
datwyler@moons.sim.es.com

From qrp-request@Think.COM Sat Dec 4 18:24:02 1993
Date: Sat, 4 Dec 93 13:23:54 HST
From: Jeff Herman <jherman@uhunix.uhcc.Hawaii.Edu>
Subject: We've been invaded

I've been trying to be as gentle in my requests, both on here and via email, but I see it's not working so here I'll be very direct and to the point: Up until about a week ago this email net was a very pleasant - all the posts were either technical or operational - no soapbox views were sounded nor wanted. We subscribed to this net because we were QRP and mostly CW fanatics. You newcomers MUST realize that there is no room for code vs no-code debates on here - save that crap for r.r.a.policy. You've subscribed to a mostly CW email net. Every remark you make comes into our private mail boxes. If you want to use this email net as your soapbox you can easily be cut off the list.

Before you post anything you should ask yourself:

- Does this have anything related to the purpose of the net: QRP
(Andrew: your C.B. handle has nothing to do with amateur radio QRP;
(The mini-thread about homebrew beer has nothing to do with QRP)
(The whining 'can't we all just get along' has nothing to do with QRP)
- Do I really want to invade everyone's privacy by sending this to their mailbox?
- Will this cause any division within the net, or will anyone be offended by what I have to say? (again, this is not a newgroup)

You have chosen to subscribe to our wonderfully informative little net and we welcome you with open arms; there are some very famous folks on here whose combined knowledge could fill an encyclopedia - one of them is one of the fastest code operators in the country.

If you share our interests, then welcome aboard; if you don't, then

please unsubscribe.

Jeff NH6IL (ex:WA6QIJ)

Post Script: If you have any complaints or feel offended please email me directly at jherman@hawaii.edu so we don't bother everyone else.

From qrp-request@Think.COM Sun Dec 5 10:15:32 1993
Date: Sun, 05 Dec 1993 08:13:18 EST
From: "Fred Cady ieefc@msu.oscs.montana.edu" <fred_c@ece.ee.montana.edu>
Subject: Re: We've been invaded

Hear, Hear. Thanks Jeff, right on.
Fred KE7X

From qrp-request@Think.COM Fri Dec 17 13:38:40 1993
Date: Fri, 17 Dec 93 13:38:11 EST
From: skitch@NADC.NADC.NAVY.MIL (M. Squicciarini)
Subject: Where is everyone

Just a test to see if my mailer is working

73 -- marty -- nr3z skitch@nadc.navy.mil

From bruce@Think.COM Mon Dec 6 16:55:25 1993
From: Bruce Walker <bruce@Think.COM>
Date: Mon, 6 Dec 93 16:56:02 EST
Subject: WT1M is back

Many thanks to Ed, WA2SCA, who maintained the QRP mailing list while I was on vacation for the last 2.5 weeks. I was in KH6, but as it was a vacation in celebration of our 5th wedding anniversary, I didn't bring any ham equipment.

Ed kept several messages for me concerning comments about the list contents, netiquette, etc., some of which were sent to the QRP-Request address and some to the whole list.

When I catch up with some of my work and the QRP archives, I will try to address some of the comments/complaints.

Alas, I did not get back in time to defend my title as the reigning Eastern Massachusetts Low-Power 160m champion in the ARRL contest this last weekend (my one and only contest certificate, and yes, there was more than one entry, but not many :-). It doesn't matter, I would have operated QRP this year anyway!

--bruce WT1M

From qrp-request@Think.COM Fri Dec 10 01:24:46 1993
From: andrews@fms.com (Andrew Sargent N8OFS)
Subject: Xtal Filters for sale...
Date: Fri, 10 Dec 1993 01:18:34 -0500 (EST)

(just in case this didn't hit the reflector before)

I have for sale some Xtal filters pulled out of older 11m rigs:

Uni Crystal Corp.	UF-074A	7.8 MHz	No. A
Yokohama (Japan)	SC-107A	10.6935 MHz	No. 77013
Kinsekisha	XF-309	11.2735 MHz	No. 5E4106
' '	XF-416	' '	No. B1

Make an offer...

--

Mesmerized by a decade of hate,	! AMATEUR =	N8OFS
Flowers and remorse,	! ARMY MARS =	AAN5HJT
Fading vision lost in time,	! CB =	THE NEON KNIGHT
Tragedy on course!!! - Frontline Assembly	! HACKER =	TH3 N30N KN16Ht